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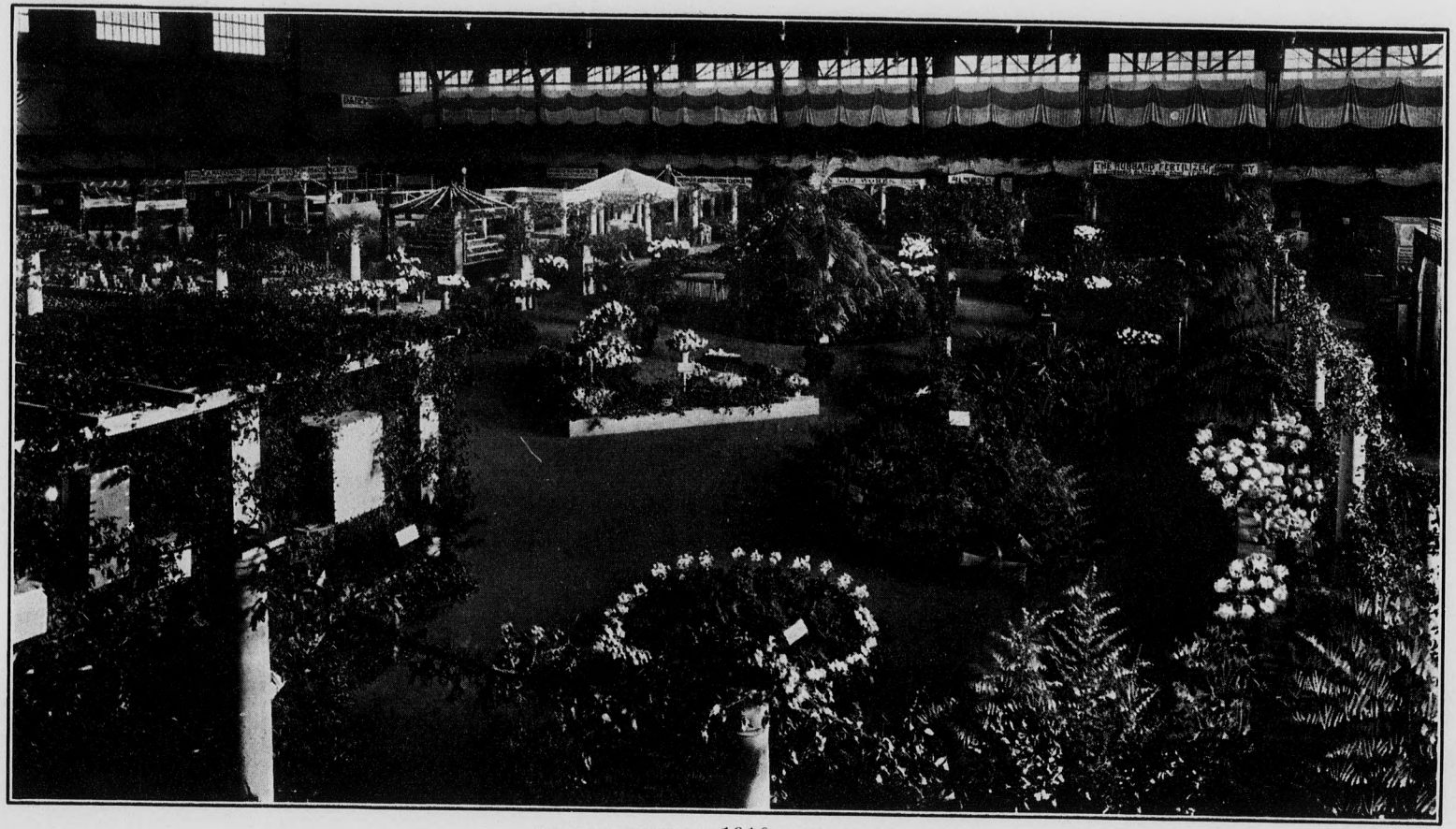

FLORAL DISPLAY 1916 EXHIBITION

REPORT

OF THE

MARYLAND AGRICULTURAL SOCIETY

INCLUDING THE REPORTS OF

THE STATE HORTICULTURAL SOCIETY

THE CROP IMPROVEMENT ASSOCIATION

THE STATE DAIRYMEN'S ASSOCIATION

THE STATE BEEKEEPERS' ASSOCIATION

VOLUME I. FOR THE YEAR 1916

LIBRARY, UNIVERSITY OF MARYLAND

PUBLISHED BY THE SOCIETY, MARCH 1, 1917

Edited by T. B. SYMONS, Secretary

College Park, Maryland

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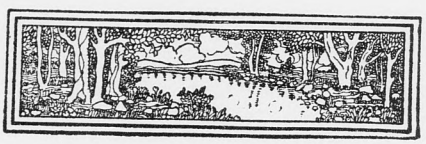

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THOMAS & EVANS PRINTING CO.
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BALTIMORE, MARYLAND

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LETTER OF TRANSMITTAL.

To His Excellency, Emerson C. Harrington,
Governor of Maryland:

SIR:

I herewith transmit to you, as directed by the Act incorporating the Maryland Agricultural Society, and also the Horticultural Society, this report for the year 1916, which contains a detailed statement of the receipts and expenditures of the Society, as approved by the Executive Council. It contains the proceedings of the First Annual Meeting of the Agricultural Society, and annual meetings of the affiliated Associations.

I trust that an inspection of its contents will convince you that the funds appropriated for this purpose have been wisely and judiciously expended.

Respectfully submitted,

THOMAS B. SYMONS,
Secretary-Treasurer.

March 1st, 1917,

College Park, Md.

MARYLAND AGRICULTURAL SOCIETY.

OFFICERS FOR 1917.

President, Orlando Harrison.....Berlin.
Vice-President, Asa B. Gardiner, Jr.....Baltimore.
Secretary-Treasurer, T. B. Symons.....College Park.

EXECUTIVE COUNCIL.

Maryland State Horticultural Society.

R. B. Thomas, President.....Ednor.
T. B. Symons, Secretary-Treasurer.....College Park.
George Morrison.....Carroll P. O.

Maryland State Dairymen's Association.

D. G. Harry, President.....Pylesville.
R. H. Ruffner, Secretary-Treasurer.....College Park.
W. H. Wheeler.....Street.

Maryland Crop Improvement Association.

Fred Wright, President.....East New Market.
W. B. Kemp, Secretary-Treasurer.....College Park.
T. M. Maynadier.....College Park.

Maryland State Beekeepers' Association.

N. W. James, President.....Baldwin.
E. N. Cory, Secretary-Treasurer.....College Park.
Dr. J. R. Abercrombie.....Baltimore.

CHAPTER 675.

Law of Maryland, 1916.

AN ACT to incorporate the Maryland Agricultural Society, to foster the development of the agricultural resources of Maryland, and to utilize all agencies intended to further the interests of rural people and to promote the welfare of the State.

SECTION 1. *Be it enacted by the General Assembly of Maryland,* That the members of the Maryland Agricultural Society be and they are hereby incorporated under the name and style of "The Maryland Agricultural Society," consisting of the members of such organizations as provided for in its constitution, and by that name shall have perpetual succession, sue and be sued, plead and be impleaded in any court of law or equity whatsoever, and may have and use a common seal, and the same alter at pleasure.

SEC. 2. The affairs of the corporation shall be managed by an Executive Council, consisting of the President, Vice-President and Secretary-treasurer of the Society, together with the President, Secretary and one additional member elected by each affiliated organization, and the said officers now elect shall be the first members of the Executive Council created by this Act, and shall hold their offices until their successors are duly elected in conformity with the respective constitutions of the said Associations.

SEC. 3. The said Executive Council shall have sole care and disposal of all funds appropriated by the General Assembly of Maryland for the Maryland Agricultural Society, and shall expend the same in such a manner as will, in their judgment, best promote the development of the agricultural interests of the State of Maryland. They shall render annually to the Governor of the State a detailed statement of all funds received from the State and all other sources, and also of all expenditures made by them and the specific objects for which sums were expended. They shall make no appropriations unless they have funds on hand to meet the same. The members of the said Council shall be jointly and severally liable for the payment of any debt created by the Council in the absence of funds in the treasury to meet such obligation; nor in any event shall a debt be contracted except by the concurrent vote of a quorum of the Council.

SEC. 4. The Executive Council shall, through the Secretary of the Society, render to the Governor of the State an annual report of its transactions, published at the expense of the Society, which publication shall include such reports, addresses, papers, and such other matter as said Council shall deem of value to agriculture and its allied branches.

SEC. 5. The Maryland Agricultural Society shall have power to adopt and enforce any by-laws and rules not in conflict with the Constitution and Laws of this State.

SEC. 6. *And be it enacted,* That this Act shall take effect from the first day of June, 1916.

Approved April 18th, 1916.

CONSTITUTION.

ARTICLE I—NAME.

This organization shall be known as The Maryland Agricultural Society.

ARTICLE II—OBJECT.

Its object shall be to foster and develop the agricultural resources of Maryland and to utilize all agencies intended to further the interests of rural people and to promote the welfare of the State.

ARTICLE III—OFFICERS.

SEC. 1. The officers of the Society shall be a President, a Vice-President and a Secretary-Treasurer.

ARTICLE IV—COUNCIL.

SEC. 1. The Council shall be the governing body of the Society.

SEC. 2. The Council shall consist of the President, Vice-President and Secretary-Treasurer of the Society, together with the President, Secretary and one additional member elected by each affiliated organization.

SEC. 3. The Council shall submit nominations for said officers to be elected by majority vote, at the annual meeting of the Society, at which time other nominations may be made by any member of the Society.

ARTICLE V—MEMBERSHIP.

SEC. 1. The Society shall consist of the Maryland State Horticultural Society, Maryland Crop Improvement Association, Maryland State Dairymen's Association, Maryland State Beekeepers' Association, and such other organizations, in accord with the object of the Society, and State-wide in their influence, as may be admitted by favorable vote of three-fourths of the affiliated Associations.

SEC. 2. Organizations eligible to affiliate with the Society shall have a minimum membership of fifty, paying an annual fee of at least $1.00 per member.

SEC. 3. An organization desiring to become affiliated with this Society shall first make application to the Council, which shall investigate the eligibility of the organization. If the organization is found eligible, its application may be voted on at the first annual meeting of the affiliated Associations.

SEC. 4. All members in good standing of the affiliated organizations are members of this Society.

ARTICLE VI—AMENDMENTS.

This Constitution may be amended at any meeting of the Council by three-fourths vote, provided, that a written notice of the proposed amendment has been given to the Secretary of each of the affiliated organizations, at least thirty days prior to the meeting at which such amendment will be voted on.

BY-LAWS.

ARTICLE I—MEETINGS.

SEC. 1. There shall be one annual meeting at such time and place as shall be determined by the Council.

SEC. 2. Such other meetings of the Society as may seem desirable may be called by the Council at any time or place.

SEC. 3. The President or any five members may call a meeting of the Council.

ARTICLE II—DUTIES OF OFFICERS.

The duties of the officers shall be those which usually devolve upon such officers. In addition, the Secretary-Treasurer shall be the Executive Officer of "Maryland Week" Exhibition, and under the direction of the Council may employ such assistants as he deems necessary, manage the finances of the exhibitions, edit the proceedings, etc.

ARTICLE III—RULES.

The Council may make such rules and regulations to govern their body as are necessary to transact business, provided same is not in conflict with the Constitution.

ARTICLE IV—PUBLICATIONS.

Proceedings of the Society shall be published as an annual report. Separates of the proceedings of the respective affiliated organizations shall be furnished to the Secretaries of said organizations for distribution to their members.

ORGANIZATION FOR CONDUCTING THE "MARYLAND WEEK" EXHIBITION.

General Manager	T. B. Symons.
Assistant General Manager	N. Schmitz.
Floor Manager	James W. Boone.
Cereal and Forage Crop Exhibits	N. Schmitz, Supt. R. C. Towles.
Plate Fruit and Nut Exhibits	W. R. Ballard.
Commercial Fruit Exhibit	S. B. Shaw.
Canned Goods Exhibit	J. B. S. Norton, Supt.
Vegetable Exhibit	E. F. Stoddard, Supt. Albert White.
Floral Exhibit	George Morrison, Supt. Wm. F. Ekas.
Amateur Contest	B. W. Anspon, Supt.
Club Exhibit Contest	E. N. Cory, Supt.
Dairy Exhibit	R. H. Ruffner, Supt.
Honey Exhibit	S. G. Crocker, Supt.
Forestry Exhibits	F. W. Besley, Supt.
Supplies	S. S. Buckley, Supt.
Receiving and Disposal of Exhibits	Wm. C. Travers, Supt.
Meetings and Announcements	G. E. Wolcott. C. E. Temple.
Office	Miss Anna E. F. McCarthy. Miss E. C. Maisack.
College Booth	F. B. Bomberger. C. S. Richardson. W. M. Hillegeist.

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REPORT

OF

FIRST ANNUAL MEETING

OF THE

Maryland Agricultural Society

Including

The Affiliated Associations

The first annual meeting and exhibition of the Maryland Agricultural Society was held in the Fifth Regiment Armory, Baltimore, during week of November 14-18. Heretofore, these meetings and exhibitions have been held under the auspices of the State Horticultural Society, which inaugurated "Maryland Week" meetings and exhibition in cooperation with the State Crop Improvement Association, State Dairymen's Association and State Beekeepers' Association. Last year it was felt that the Exhibition had grown to be an agricultural affair, and as many matters were constantly coming up which required action of a central organization, it was thought best to form the Maryland Agricultural Society. This Agricultural Society was not in any way to interfere with the autonomy or individuality of the affiliated Associations, but simply to serve as a central, legal body made up of the officers and members of the affiliated Associations, to consider matters of interest that affect the agriculture of the State and conduct those phases of "Maryland Week" which affect more than one industry. The members of the Horticultural Society who fathered this great agricultural event took a leading part in suggesting the formation of the Agricultural Society as a logical sequence in the great development of "Maryland Week" in its many phases.

The aim of "Maryland Week" is to promote the agriculture of the State. The meetings and exhibitions are planned with the sole aim of further educating our farmers in the improvement of their crops in both quantity and quality, and to demonstrate to the city public the wonderful possibilities of this State in all phases of agriculture and horticulture.

The Nineteen Hundred and Sixteen exhibition, which crowded the large Fifth Regiment Armory, covering 60,000 square feet, surpassed any previous show presented to the public by the affiliated Associations. In arrangement, quality of exhibits and general attractions the exhibition established a high standard for the future. The State-wide interest manifested in the "Maryland Week" meetings and exhibition makes them a great force in promoting our agricultural and horticultural resources. The meetings of the Society, during the week, were addressed by the leading agricultural educators of this country. The proceedings are published herewith, together with those of the affiliated meetings held under the auspices of the Agricultural Society. Separate proceedings of the affiliated Associations may be had upon request of the respective secretaries. The meetings and exhibition were opened Tuesday evening, November 14th, 1916, with the following program:

TUESDAY, NOVEMBER 14th, 8.30 P. M.

Meeting called to order by Samuel M. Shoemaker, President of the Maryland Agricultural Society.

PRESIDENT SAMUEL M. SHOEMAKER: The Right Reverend John Gardner Murray, Bishop of Maryland, will offer the invocation. After that Mr. Carl R. Gray, President of the Western Maryland Railroad, will preside and introduce the speakers.

INVOCATION.

Rt. Rev. John Gardner Murray,
Bishop of Maryland.

Oh, Almighty and Eternal God! Heavenly Father, we bow in Thy presence at this evening hour, recognizing Thy supreme sovereignty over us and acknowledging our direct dependence upon Thee. We are truly grateful this year for the glorious gift of life with all its attributes, its possibilities and its powers, and especially do we thank Thee that Thou hast cast our lot within the border of this State of Maryland, a land whose waters are full of good, a land whose hills are full of fuel, a land whose forests and fields are full of flowers and beauty; a land of brooks, of waters, flowing from valleys and hills; a land of wheat and barley; of vines and fig trees, and pomegranates; a land of love; of oil and of honey; a land in which we feed without scarceness because of the plentitude of its products; a land whose stones are iron and out of whose hills we dig brass. For these and all Thy many blessings of life we praise Thy holy name, and we beseech Thee,O God, that as Thou hast thus gifted us with these wonderful blessings, that we may not fail to recognize our corresponding obligations, but that in all that we do and in all that we say, and all that we think, and in all the love and labor of our life, we may try to show our gratitude to Thee in such acts as shall make not only for our own welfare, but also for the welfare of humanity at large. We pray Thy blessing upon the husbandmen of our State, our country, and the world. We pray Thee that Thou wilt multiply the harvests of the world. Open Thy hand that plentiness may prevail and, as Thou dost thus bless those who constitute the corner-stone of industry, who bring from the earth over which Thou dost breathe and refresh it, food for man, so may Thy blessing rest upon our city, our commonwealth and our country, in its every relationship and sphere, for with all in authority over us, whether in municipal, in state, or national affairs unless they are guided by Thee, they cannot be guided aright. May Thy watchful providence lead and direct them;

may Thy wisdom teach them, and through Thy power may they accomplish Thy will for the welfare of the children of Thy hand and for Thy deserved and eternal glory.

And as with us and ours this night, O God, so with Thy people through the world at this particularly critical time, may Thy gracious presence be universally realized; may Thy omnipotent power be universally exercised, and may Thy blessed peace be made universally to prevail among all nations of the earth, through Jesus Christ our Lord, who hath taught us, when we pray, to say:

Our Father, who art in heaven; hallowed be Thy name; Thy kingdom come; Thy will be done on earth as it is in heaven; give us this day our daily bread, and lead us not into temptation, but deliver us from evil, for Thine is the kingdom and the power, and the glory, for ever and ever. Amen.

REMARKS BY PERMANENT CHAIRMAN.

CARL R. GRAY,
President Western Maryland Railroad.

Ladies and Gentlemen:

A word in explanation of just what the exhibit of the evening is, will be in order before I attempt to introduce the speakers. This evening and the other evenings of the week are under the auspices of the Maryland Agricultural Society. This Society is an amalgamation of certain bodies which, under a common understanding, have been conducting these Maryland Week meetings heretofore, and are the Horticultural Society, the Crop Improvement Association, the State Dairymen's Association, and the Beekeepers' Association. I think, as Marylanders, we have a right to feel a very appreciable pride in this exhibit, its continuance, and the reception which it has been having. I believe that it is unique, that there is nothing like it in the country, and that in its continuance and in its prosperity, and in the cordiality of its treatment by the people of Baltimore and of Maryland, that it is the envy of a great

many of our sister associations in neighboring States. Agriculture is becoming more and more an object in the mind of every State in the Union. The Western States, in particular, have been forging ahead year after year, a great many of them under circumstances that have called for a great deal of sacrifice, and yet their realization has been very thoroughly met, and even in times of adverse conditions of nature the knowledge that they have acquired along the lines of scientific agriculture has enabled them to overcome and largely diminish what otherwise would be, and would have been in the old days a total failure. Maryland is making substantial progress in this line, and we meet here at these yearly times to exchange notes and to see what each other is doing, and it is a real satisfaction, I am sure, that as the years go on, this week set aside for the consideration of agricultural problems, a sight of the real products, their enhancing values and their comparative worth, will be of most substantial benefit to every one.

I am sure it is a matter of regret to the Mayor that he is not able to be here tonight. He has had a long, laborious trip, and has just returned, not more than an hour or so ago, from New Orleans. It is impossible for him to be here, but he has been kind enough to arrange for a representative, and I am delighted to introduce his secretary, the Honorable Robert E. Lee, who will deliver the address of welcome. (Applause.)

ADDRESS OF WELCOME.

ROBERT E. LEE, Baltimore.

Mr. Chairman, Ladies and Gentlemen:-

In apologizing for the absence of the Mayor I wish to say that it is not due to an underestimation of the value and importance of this gathering to the future development of our State. It is due to the fact that the public demand for his time is so great that he is obliged to forego the pleasure of being here tonight and sends me as his representative instead. The very excellence of this demonstration demands public recognition of the services rendered by the committee of splendid gentlemen, whose labors have brought to fruition such an exhibition of Maryland's productivity.

With the products of the farm from every section of our State so elaborately and elegantly displayed, cannot but make a profound impression upon those who witness this Maryland Week exhibition, and make of them more devoted and patriotic citizens of our State. I fear that we little appreciate the great possibilities that Maryland offers to the home seeker. The fertility of the soil,—the admirable climatic conditions,—topography of the State, the excellence of its geographical position, the splendid courage and loyalty of her people, place Maryland in a position to be envied. The salutary laws which have found their way upon the statute books to protect our people in their health, their happiness, their property, encourage thrift and industry and maintain a high standard of moral and social responsibility, are the best evidences of the responsiveness of our public officials. The liberality of our State in its provisions for maintaining public institutions and the constant strengthening of the laws to make their administration more effective and beneficial, should cause all Marylanders to proudly proclaim her virtues far and wide. A small State in area as compared with some, yet rich in productivity and the opportuni'ies for the establishment of almost ideal conditions under which to live. We do not have to traverse great area in order to be at the door of our neighbor. A sleeping car is unknown, so far as travel within the State is concerned. You can leave the mountains of Western Maryland in the morning and eat your evening meal by the seaside. Our splendid system of State roads make it possible to travel to all important points with rapidity, ease and comfort. The great interdependence and close business relationship of the people of the county with the people of the City of Baltimore is constantly bringing us to a sterner and surer realization that our local attachments shall not sway our judgment or increase our prejudice one against the other, but make us feel we are brothers in a common cause, and first of all, Marylanders. I know of few movements, if any, which will tend to bring into closer relationship and firmer union, people of all sections of Maryland, than this annual treat which has lately grown to such dimensions in our community.

Witnessing hereabout, as I do, the leaders of Maryland's business, politics, education, social and civic beterment, I cannot but feel that the common cause of all our people will finally be worked out to the general satisfaction of all. With the Governor of Maryland, surrounded by men of substantial business interests and high standing from every county and the City of Baltimore, there must develop from such a combination a desire and disposition to serve Maryland's highest aims and purposes. When you wander about this auditorium and see the magnificent exhibits placed at great trouble and expense, we at once apreciate the public spirit which has animated this occasion. Take the splendid exhibit of the State Treasurer, Mr. John M. Dennis, with his prize winning cattle—the horticultural display by Senator Harrison and the floral exhibition of Vincent & Sons Co., the splendid display of farm products by Mr. Van Lear Black and others too numerous to mention, are but instances of the great trouble necessary to produce this splendid climax.

May I, without further comment, congratulate Mr. Symons of the Maryland State College and all those who have been associated with him and have contributed toward the success of this occasion and trust that it will grow in dignity and importance and become a strong factor in producing a closer friendship of Marylanders from whatever section they hail.

MR. CARL R. GRAY: I will ask Senator Orlando Harrison, from the Eastern Shore, one of our greatest orchardists, to reply. Mr. Harrison. (Applause.)

RESPONSE TO ADDRESS OF WELCOME.

By HON. ORLANDO HARRISON.

Mr. Chairman, Mr. Secretary, Ladies and Gentlemen:

On behalf of the Maryland Agricultural Society, we want to thank the Secretary for his welcome to your city. I want to remind the Secretary of one thing. He reminded us that at his home potatoes and corn had gone rather high. In reply,

I want to say that for twenty years the agricultural interests, the farmer with his farm, has been feeding the city people without any profit. (Laughter and applause.) Mr. Secretary, we are glad to see that our time has come. We think that corn shouldn't go at less than a dollar a bushel, and wheat at two dollars, and potatoes one dollar, and then we will have something coming to us, and I am glad to see that the time is here. It is true that the man who is cultivating the soil is getting something from the sweat of his brow—probably the first time for a number of years.

Friends, you see the distinguished citizens of our State on this platform, referring to Governor Harrington, Secretary of State T. L. Simmons, State Treasurer John M. Dennis, members of the State Board of Agriculture, S. M. Shoemaker, Carl R. Gray, Dr. F. J. Goodnow, Col. A. W. Sisk and Bishop Murray, R. E. Lee and E. P. Cohill.

Secretary Lee said it was his pleasure to be down at Annapolis to take part in the legislative work last winter. I am pleased to say that Robert E. Lee, in common with others, took an active part in securing the needed legislation that was passed. And I want to say that the members of the Legislature, from the Governor down, worked hard for the agricultural interests. It was due to the organized interests representing Maryland Week, led by Mr. Shoemaker, and backed by the State officers, that such a record in agricultural legislation was placed upon our statute books. We now have a State Board of Agriculture comprised of the leading men in this State, and if they do not put Maryland State College of Agriculture on the map as one of the leading institutions of the kind in the country it will not be because they are not vitally interested or because they will not devote their time and energy to it, but because the people will not back them up with the proper support and needed funds. This great show is the result of team-work between all Associations, as the result at Annapolis was the result of team-work. Few of you realize the great amount of work that was necessary to secure the support of all interests to pass the many bills that were necessary for perfecting our present State organization of the agricultural interests. The

President of this Society, Mr. Shoemaker, worked day and night, and with his indomitable will and courage saw it through. I want to say on behalf of the State Comptroller, Mr. Hugh McMullen, who is not here, that he was a firm believer in standing by the Agricultural College and the interests it represents.

The opportunities that we have are not surpassed by any State in this Union.

In conclusion, I trust that we, as citizens, will do our part and if we do, Maryland will be the foremost State in this country. Again, I thank you, Mr. Secretary, for the cordial welcome to this, our metropolis of the State.

MR. CARL R. GRAY: Senator Harrison has spoken about the real constructive work that was done at the last session of the Legislature. As I had nothing whatever to do with it, and perhaps most unfairly profited by a great deal of it, I can bear homage to these men who did this work. Our present law is a real constructive measure, correctly founded. I am sure the Board which has been selected, with the assistance of the people, the assistance of the farmer, with his sympathy and his cooperation back of it, will make a real difference in the agricultural conditions in the State of Maryland. Through all of this there was the entire sympathy and the support of His Excellency, the Governor, and it is a very great pleasure that I have in introducing to this meeting His Excellency, E. C. Harrington, Governor of Maryland. (Applause).

ADDRESS.

By HON. E. C. HARRINGTON, Governor of Maryland.

Mr. President, Ladies and Gentlemen:

It is with no feigned pleasure that I congratulate the management of this exhibition upon the extraordinary display of the agricultural products of the State, presented for our inspection and that I welcome this vast throng to the opening exercises of what is popularly called "Maryland Week."

The industry which is here represented is the most important of all the industries throughout our borders, and yet until very recent years it has not received proper consideration and aid by either the National Government or by the individual States. The question has often been asked: "Why has this been so?" Has it been due to a lack of appreciation of the wonderful importance of this industry as bearing upon our growth and standing as a nation, or has it been due to lack of cooperation or organization upon the part of the farming interests themselves? And I believe the conclusion has been finally arrived at that it has been due rather to the latter cause than to the former.

The farmer has been slow to organize, slow to appreciate and fully understand the importance of organized effort. The farmer has been the most conservative of all classes. The causes for this are not difficult to solve. Occupying the country portions of our country, they have been more deprived of transportation, of communication with the outside world. But the extension of the free rural routes, the rapid development of transportation advantages, the establishment of the parcel post have placed the farmer in closer touch than ever with the moving world. The daily newspapers of the country now go into almost every farmer's home, and the wonderful development of motor power and the building of good roads now in progress in every State of the Union is placing the farmer's home in easy access to the county seats, even to the great metropolis of the country, and practically brings the outside world to his breakfast table. The markets of the world now come to him at almost every railroad station, buyers of truck and grain are to be found during the harvesting, and the markets of the world are almost brought to his door.

What is now wanted are large elevators in which the farmers at reasonable costs could store their grain, not for the purpose of cornering the markets, but in order to obtain the price themselves, due them according to the laws of natural production, and not due the middleman or speculators, who are not producers or makers, but are in a better position to discover the overproduction or underproduction of crops and to take advantage of such conditions.

The farmer is entitled to these profits, and the time is fast coming that by organization they will be in a position to bring about the desired ends, which they cannot individually do.

The farmer ought to be able to realize in part upon his crops so that he might not be compelled to sell his crops at prices which bring less rather than profit.

There is a wonderful field for farmers' organizations, not alone along the line of production and caring for crops, the prevention of diseases, but along the line of marketing their crops, of disposing of their crops to the proper markets and of countless other questions. The farmer of today cannot live in the past, can no more farm as his father farmed, can no more use old methods, old machinery, old processes, than the merchant of today can do so, nor the manufacturer. The merchant who does not keep abreast of the times goes by the board, the manufacturer who does not employ the most up-to-date methods, the most up-to-date machinery must take his place in the rear. So today it is with the farmer. We need the educated farmer, we need the business farmer. I believe every farmer should keep books, should take stock every year as does the merchant and the manufacturer. The men of today who are using business methods on the farm and who are keeping themselves the best posted and informed upon all the advanced and improved methods of agriculture, as announced and promulgated by our agricultural colleges.

But I am reminded that I did not come here today to tell you good people how to farm, for although raised upon a farm and residing there until about sixteen years of age, and although having been interested at all times from a personal standpoint in farms, I expect I should rather be put down as classified some distinguished speaker, rather as an agriculturist than as a farmer. I do want, however, by my presence as the Governor of the State to show my intense interest in every movement for the welfare of the farmers of our State and anything that has for its purpose the advancement of the agricultural interests of the State. We have a grand old commonwealth, rich in history, proud of her traditions. She is equally as fortunate in her climate, in

her soil, in her variety of elevation, in the productivity of her mines, in the incalculable riches of her matchless bay and its tributaries.

In climate she has neither the extreme heat of the south, nor the rigor of the north. In soil, she possesses every variety, from the mountains on the west, the uplands of central and southern Maryland, to the lowlands of the Eastern Shore, and then, situated as we are, with our own metropolis, in my opinion destined to grow and develop as no other city on our eastern coast, with the great cities of New York, Philadelphia and Boston at our door and with our National Capital at our borders, Maryland is mightily favored and has an opportunity unsurpassed for future development. And in my opinion we have a people alive to the situation and in the onward race will be prepared to take full advantage of the opportunities and advantages which our position has placed within our grasp.

I am glad to see our farmers aroused. I am glad to see all the allied interests organized. I am glad we have all awakened to the advantages that will come to us by a proper appreciation of the great work that a good, first-class, up-to-date agricultural college can do in our midst.

In the reorganization of the Maryland Agricultural College as a real Maryland State College of Agriculture, entrusted with the naming of the first Board of Trustees, I am happy to state that I named every one of the Board from a list recommended by the allied organizations of the farming or agricultural interests of the State. From the list of twenty odd names recommended to me, containing the names of many of our worthy and distinguished sons, I selected nine men in my opinion eminently competent and qualified for the work entrusted to them.

The different bills of reorganization and placing all the agricultural interests of the State in the hands and control of an Agricultural Board, to be identical with the Board of Trustees of the Maryland State College of Agriculture, were passed practically as desired, without the dotting of an "i" or the crossing of a "t." I said to the Legislature: "Keep your hands off, we want these bills to be passed as the far-

mers want them, we want them to have a Board of Trustees that they want," and this has been done, and now you see we have placed the responsibility into your hands, and we intend to lend you every encouragement and aid that is in our power to bestow.

I want to see the Maryland State College of Agriculture developed as an agricultural college to the highest state of efficiency, and that in no niggardly way. We want not only a college where the farmer's son can go for an education and to obtain the most progressive ideas of agriculture, but as the fathers themselves cannot go to the college, we want to develop that plan and system which virtually takes the college to the farmer.

This is only along the line of other professions or other branches of industry. We have a State Board of Health. This board has a specially appointed health officer for every County, and the object is to place their knowledge and protection in every locality. In our school system we have now established a system by means of which scientific and advanced methods of instruction are carried direct to every schoolhouse in the land, and along this same line that system of development of the agricultural education of our State will be defective which will not bring to every County, to every locality, and indeed I hope, to every farmer direct who desires the most advanced methods, the most up-to-date information. The farmer must be taught the importance of good seed, but furthermore where to get these seeds at a reasonable cost.

Plants, crops of all kinds, have their diseases the same as mankind. Epidemics or scourges occur with these plants or crops the same as with the human race, and specialists should be on hand to assist or advise how to meet these conditions in every locality where they arise.

I believe that there ought to be a real, live, active, capable and efficient representative of the College in every County of the State, who should devote his whole time to the study of the conditions of the crops in the Counties, arrange for a system of instruction at public gatherings upon agricultural subjects, give assistance and advice when called upon on

agricultural topics, keep posted on the disasters which befall, and if emergencies arise beyond his ability to cope with to keep in touch with the College, that every aid may be given within the knowledge or power of the State College of Agriculture or any of its departments.

A great deal has been said of late about preparedness. A great cry has gone up from one end of our country to the other that this nation of ours should be prepared for every emergency that might happen, and in that policy I fully concur and believe, and I believe in this policy for the farmers of the State and for our agricultural interests—the spirit of preparedness for the emergencies that may arise.

There has been many a peach or fruit crop ruined or destroyed in this State that could have been prevented had the owner taken advantage of the information or knowledge, yes, even assistance, he could have obtained at our College, and it is this information, this knowledge, this system of prevention or preparedness which we seek to bring home to every farmer's door.

A great deal is likewise being said about the improvement in the condition of country life. I am delighted to hear this discussed. A great deal is being done to make country life more enjoyable, and I sincerely believe the time will soon come when the cry will go up not simply "back to the farm," but "stay on the farm" as the surest and most certain way of earning a fair livelihood and a fair competency in the struggle of the world for existence.

With our great arteries and spurs of good roads now reaching out into the farthest sections of every county of our State, with the extension of the telephone system, following these good roads, and entering almost every farmer's house, with the rural free routes delivering mail daily at every farmer's gate, with the establishment of the parcel post which brings the stores of our great metropolis in daily touch with every home, with the electric lights also following the good roads system, and with the artesian wells which at moderate cost furnish water, and with the onward march of the automobile, which places the farthest removed home of any county prac-

tically within an hour's ride of the county seat or some large city, the farmer's home is going to be, if it has not already become, the ideal home, so that when he is prepared to take care of his crops, and when he is assured of a proper return for his labor commensurate with his work, as in other walks of life, the question of "back to the farm" or "stay on the farm" will be solved.

I am perfectly aware that the farmers have their burdens. In the building of these good roads, in the rebuilding of the State College and in running all the institutions of the State government a great deal of money is required and our tax rate has become burdensome. I know that the farmers of our State believe in economy and believe that our tax rate is already burdensome, and I believe so too, but I do not believe that they begrudge the money spent for our good roads or the money spent in the upbuilding of your Agricultural College, but they demand, and they have the right to demand the strictest economy consistent with good government in the administration of public affairs by their Legislature and by their State government.

I shall not, indeed, trespass upon your kindness by even remotely touching upon the question of politics, but I may be permitted to remark that in compliance with the promises and pledges made to the people of our State, the last Legislature of Maryland cut down its own expenses and saved in the expenses of the Legislature itself the sum of $77,500, and that a further reduction of over $100,000 was saved by reduction and abolishment of different offices in our State government, and I think I am plainly within my bounds when I state that the appropriation of the last Legislature was practically a million dollars less than the appropriations of the Legislature of 1914, and we feel no branch of the State government has materially suffered.

The last Legislature of Maryland was the most economical of any Legislature that has met for many years in Maryland, and I want further to add the most moral. There was no money wasted by that Legislature, and no bill that the lobby advocated was passed, and the lobby was not powerful enough to beat any bill.

I repeat it was a moral Legislature. There were a number of very important bills passed. The Educational Bill, passed as recommended by the Educational Survey Board, the Agricultural Bill, passed as recommended by the Farmers' Associations of Maryland. Both of these measures received my most hearty support. I am expecting much of both of them. They should go hand in hand. The education of our children, the advancement of the farming interests of Maryland. I hope and I believe that I shall look back in time to come to these measures with the greatest pleasure as having contributed somewhat to the advancement of the best interest of the State.

But the day is past when either the nation or any State can neglect this great industry. The National government in the last few years has placed upon our statute books many wise and useful laws in the interests of the farmers and the agricultural interests of the nation:

The Rural Credits Act.
The Good Road Laws.
The Federal Reserve Act.
The Federal Trade Commission.
The Federal Warehousing System.

The Cooperative Agricultural Extension Act for conveying agricultural information to farmers and for inducing them to apply it.

When this last Act shall be in full operation there will be expended annually under its terms from Federal and State sources alone, a total of $8,600,000 in the direct education of the farmer and will result in placing in each of the 2,850 rural counties of the nation two farm demonstrators and specialists who will carry direct to every farmer of the nation, all the latest expert and scientific knowledge upon all agricultural or farming problems.

We are indeed living in a wonderful age, and the race is to the brave and diligent and not to the laggard. There is no place in the American life for the laggard. We must be up and doing and in no occupation is this more true than in farming, and the men of Maryland must do our part. We are all proud of Maryland's history and her achievements in all the professions or walks of life.

As I have said we have a climate and soil unsurpassed. We are prosperous today as never before. But no State or nation can remain still. There is no middle line. We must go ever forward. Our lands must be made still more fertile. We must have adequate facilities to move our crops. Enterprise will not or cannot give us proper storage facilities; the State must provide them. We must demand and we must receive a proper grading and handling of our products, and above all we want to inspire and live up to a proper spirit of loyalty for the general welfare of our whole State. This great exhibition of the horticultural or agricultural or farming wealth of this State in our great metropolis, and the bringing together from all parts of Maryland this vast throng of our citizens personally interested in the agricultural development of our State, to be greeted here and assisted by the citizens of our great metropolis, ought to lend to weld us into one common brotherhood with a common ambition and a common purpose for the future welfare, the continued growth and prosperity of our whole State.

There is need for united action. We are mutually dependent upon one another. The success of each part should be the common glory of all. I predict a new era for our State. Our natural advantages of geographical location, of the character of our climate and our soil, of the industry and fidelity of our people is beginning to attract outside capital to our borders, and therefore at this time more than at any other should all Marylanders present a united front for the common good of all. Meeting here as we do, we show our products not only to the outside world, but to each other, and one part of the State can see what the other part is doing.

I am aware that I have already spoken too long. I congratulate you on your fine gathering and exhibits here. I again congratulate those having in charge this Maryland Week meeting on their zeal and energy in this great work, and hope this meeting will be crowned with the greatest success.

How grateful should we all feel here today. I wonder if we stop amid the many hurried duties and calls of life to fully appreciate how blessed is this State of ours, how blessed the condition of our glorious country.

I look into the faces of this gathering and see nothing but sunshine here, happiness and contentment everywhere and scarcely a shadow across this sunshine. In what civilized country save ours could such a gathering meet today?

While on the other side of the ocean, our ancestors, the nations of the world, are engaged in a struggle so stupendous and awful that it staggers the judgment and sickens the soul, and while upon our southern borders anarchy reigns and civil war rages in all its fury we meet here today in old Maryland, My Maryland, the land which first gave to the world civil and religious liberty, in this land of the free and the home of the brave, with the stars and stripes floating proudly over us, with every cloud fast going below the horizon, to talk of agricultural interests, with our State and country prosperous as never before in its whole history, and with our hearts full of gratitude and praise to Him who ruleth all things well and who has but now so signally shown us the highest manifestations of His divine guidance.

I earnestly hope that this gathering may be productive of much good; that our people may live in concord and harmony, and when another year still rolls around, we shall all with equal praise, return our thanks to Almighty God, that He has still preserved us a peaceful and happy nation.

As the Executive of our grand old commonwealth, I bid you all a most hearty welcome and sincerely hope Maryland Week this year may surpass all others hitherto in every respect that will tend to advance and make happy all sections of our grand old commonwealth.

CHAIRMAN CARL R. GRAY: Ladies and gentlemen, the next speaker is from Kansas. I had the good fortune to live, for quite a number of years, in Kansas. In the early '90's we had a period of agricultural unrest in Kansas, and it manifested itself politically and upturned the existing order of society out there completely, and a very unaccustomed lot of officials came into public life. The conditions generally were very unsatisfactory, as I recall, and a great deal of inquiry was made as to the fundamental reason for that condition. At last, one of our papers, the Emporia Gazette, wrote

an editorial, which has since become very famous, headed "What's the Matter with Kansas?" The conclusion being reached that Kansas had started out to raise Hades and had an overproduction. (Laughter.) The natural result of that has been a very clean determination on the part of a very intelligent commonwealth to have less of an overproduction of that character and very much of an overproduction of another kind, and Kansas has gone steadily from far below par in the last sixteen and eighteen years to away above par, and it has been due almost solely to the intelligence—the educated intelligence—of her farmers. Her College ranks among the very best, and we are fortunate to have with us this evening the executive head of that College, who has done so much for Kansas—placed her almost in the front rank along agricultural lines—scientific agricultural lines. Dr. Waters is not a stranger to the East, although most of his life has been spent in the West. He has been a professor of horticulture at the Pennsylvania State College. In addition to this, he has been the dean and director of the State College of Agriculture of Missouri, and is now the president of the Kansas Agricultural College. I have the honor and a great deal of pleasure in introducing to you Dr. Waters, the president of the Kansas Agricultural College. (Applause.)

A SELF-SUSTAINING AGRICULTURE.

DR. H. J. WATERS,

President, Kansas State Agricultural College,
Manhattan, Kansas.

Mr. Chairman, and Ladies and Gentlemen:

Allow me to add my congratulations to those of the other speakers on your beautiful exhibit. It is my good fortune from year to year to visit many meetings which in other States are called "Farmers' Week," and I know of no Farmers' Week that has anything which would compare with your exhibit in its extensiveness, its attractiveness, and its educational value. I was astonished at your corn show. Somebody has been doing some very good work in this State

in improving Maryland corn. Your exhibit would do credit to that of a State corn show in Iowa or Illinois. (Applause.)

I had expected to see a splendid fruit exhibit. Maryland has become famous for her splendid apples and peaches and berries, but I was not prepared for so elaborate and extensive an exhibit as the one I have seen here this evening. I congratulate you also upon having the opportunity of presenting the product of your intelligence and skill to an audience such as a great city like Baltimore affords. After all, there is no other way by which you could so successfully dignify agriculture, your own calling, than that of showing the best of your product to this very discriminating city audience.

This evening I hope we may be able to take a large view of agriculture and the relation it bears to our safety and progress. I shall address my remarks quite as much to the city man as to the country man, because, after all, interest in agriculture ought to be universal.

There are two principal classes of society in any country, the one rural and the other urban. Each is dependent upon the other for its highest development. The greatest misfortune that can befall any nation is for its rural and its urban classes to fall apart.

There ought not to be any obstacle to the free intermingling and intermarrying of country and town people. It ought to be true that no one could determine by their dress, their manners, or their culture, which persons come from the country, and which come from town. It ought not to be true that the town girl would rather marry a drug clerk or an omnibus driver than an industrious young man with a farm. Conditions under which the best women and children are not content to live, will not long attract good men.

Let us try to do a little straight thinking on these fundamental questions for straight thinking must always precede correct action.

We fall into an error when we assume that we are the first to have to meet the problem of high cost of living. The problem is as old as civilization and has intruded itself as a serious factor into every civilization that has preceded ours. Plenty

of food for everyone at a low cost was the newest thing under the sun and it also was among the most transitory of things.

We have dealt with the problem of too few people on the farm and its result, high cost of living, as though it were a matter in which the farmer alone is concerned. In truth, he is the only person in all the country who does not suffer from this cause. A situation in which there are too few producers cannot help being highly satisfactory to those who are engaged in production, just as a situation in which there were too few grocers would be entirely satisfactory to those engaged in the grocery business. Such a situation would be unsatisfactory to the user of groceries, just as the present situation is unsatisfactory to the consumers of agricultural products, the people of the city. It is, therefore, the man who buys the products of the farm who is primarily and almost solely interested in having a sufficient number of people on the land. He is quite as much interested also in the kind of people who till the soil as he is in the number of such people.

Why Teach Agriculture?

We are all interested in keeping the farmers' children on the farm and view with alarm their coming to town to live. It does not occur to us that if the farm possesses so many advantages over the city as a place in which to live and to make a career, that our first duty is to our own children, and that we should be bringing them up with a desire to live in the country and to till the soil. Such, however, is not the case. We think of instruction in agriculture in the schools as entirely for the farmers' children, and for the sole purpose of keeping the farmers' children on the farm.

The primary purpose of teaching agriculture is to create an intelligent interest in this fundamental industry. Human interest is the most difficult and costly thing to obtain and is our most precious asset once it is acquired. Teaching agriculture broadens the vision of the child whether it lives in the town or in the country, and widens its range of choice of occupation. In a democracy the utmost freedom in the choice of an occupation is the fundamental right of every child and this right must not be abridged. If the public schools of the

city sought to make blacksmiths of the sons of the blacksmith, and to induce the son of the bank director to follow in the footsteps of his father, the country would be shaken with protest because the public school—the most powerful agency left us with which to promote democracy—was being employed to destroy democracy. The boy or girl brought up in the country is entitled to as much freedom of choice of occupation as is the boy or girl brought up in town, and is entitled to as substantial help from the public schools in making an intelligent choice.

Teach the Truth About the City and About the Country.

Formerly the differences between the city and the country were much exaggerated. The young people of the country were taught in their homes, in the school, and through the literature placed in their hands, largely to overestimate the advantages of city life, and they were not taught correctly to comprehend its disadvantages. Likewise, the people of both city and country were led to exaggerate the difficulties and drudgeries of country life, and were not made fully to appreciate the great and peculiar advantages of such a life.

The trend cityward, therefore, has been partly due to the half-education which prevailed in the rural districts, and which gave farm boys and girls glimpses of a more attractive city life than really existed, and did not teach them the true attractiveness of country life, and how they might attain their ideals in the country.

City children should be taught about the country, its opportunities, its beauties, its profits, and its advantages, as well as about its limitations and its labors. They need to be taught, not alone of the sweats and toils of the farm, but that the chances for moderate success, which is as much success as the average may hope to attain, are best in the country; and that the country is the place in which human life may best flower into splendid physique, strong mind, and sound morals.

Give the Country a Fair Chance.

We are now seeking, through a more extensive and more practical education, to improve conditions in the country that the country may successfully compete with the city. The plan clearly recognizes the elementary principle that people will quickly discover superior opportunities to secure an income, and to procure the satisfactions of life. Therefore, if the rural community does not afford the kind of life that ought to attract a part of the best of the city children, it cannot be expected to hold a fair share of the best of the country children. The foundamental remedy must be sought in the life itself. Altering our attitude toward rural life can have little effect when applied as a sole remedy. This has been the primary weakness of all previous attempts to hold a proper proportion of the best people on the land, and every such attempt has failed. Such a remedy can be effective only when the conditions on the farm have been such as successfully to compare with those of the city.

If farming offered as good business opportunities as may be found in the city, and if the country afforded as good social, school, and church facilities as does the city, there would be no complaint of too few people on the land. A system of agricultural education to be entirely successful, therefore, must reach all the people, for again I say interest in agriculture must be universal.

Within recent years the ratio of the rural to the urban population has declined in most countries of the world, yet the dependence of everybody on the products of the soil has greatly increased.

Manufacturing has recently gained rapidly in importance and has become a city industry, but its dependence upon the farm for raw material was never so great as now. If the farmer refused to make his contribution to manufacturing, nine-tenths of the factories of the United States would close their doors for lack of raw materials upon which to work.

In the United States, of the raw material used in manufacturing, one-half of one per cent. is derived from the sea; five per cent. from the forest; thirteen per cent. from the mines; and eighty-one per cent. from the farm. The children of the

man who answers the call of the factory whistle should be taught that not only the clothes which their father wears, and the food contained in his dinner pail, but also the materials which provide him a chance to work and afford the family a living, come from the farm.

The children of those who are engaged in transportation should understand that it is the soil-produced material which affords them nine-tenths of their employment. The merchants should realize that nearly all the goods they buy and sell came originally from the farm. The children of the banker ought to know that a large part of the value represented by every dollar which reaches the bank vault was produced in the country and that in the long run it makes as much difference to them as it does to the children of the country how much of each dollar remains in the country with which to build the right kind of rural life.

City and Country Progress Together.

The city children ought to understand that though the farmer has undertaken the most important task of any man, that of providing the world with its food, clothing, and the raw materials for its industries, he never has had and probably never will have much to say regarding the conditions under which he will discharge that task and these children should understand that the way in which society determines these conditions will in turn determine the standing and progress of both city and country. City children should appreciate the limitations of farm production and realize that conditions which they impose that are not to the best interests of the country people will not in the end be for their own best interests. They should early learn that no civilization has withstood the effect of the decay of its rural people. Occasionally a nation may be so situated as to support itself with commercial and transportation enterprises alone, but the exceptions will always be few to the law that a people which forgets agriculture cannot long survive.

Living Within Our Income.

The way in which we live both in town and in the country affects vitally the welfare of our agriculture. If we insist upon living upon a plane which the farmer cannot support we first exploit the soil and then the people on the soil. Are we living and farming and conducting our business so as to be self-sustaining? Are we living within our income?

We boast much of having the largest foreign trade of any nation in the world and also of having the largest favorable trade balance. In normal years we sell to foreign countries a half-billion dollars more than we buy, therefore, our trade balance is five hundred million dollars in our favor each year, and we invest it in schools and in churches, and in roads, and in costly cities, and expensive ways of living. But is our trade balance net profit? Suppose a man should engage in the shoe business in your home town, with a twenty-five thousand dollar stock of shoes on his shelf, and run along, always with money in the bank, living well, paying his bills, supporting his church, and, suppose that at the end of each year, he had a thousand dollars more in the bank than he had at the beginning of the year. We would say that he was making money, and that he was living within his income. All this time, however, he has not taken an inventory, he has not counted the shoes on his shelf. Suppose at the end of three years he should take an inventory and should find that, instead of a twenty-five thousand dollar stock of shoes with which he began business, he had only fifteen thousand dollars worth. We would say that he had not lived within his income; that a part of the showing he had made was at the expense of his capital.

Let me use another illustration, which more nearly describes what has actually happened in this country. Suppose a young man inherited a vast estate of farm timber and mineral land, and suppose he went on the estate, married a frugal and industrious wife and established a home. Suppose he brought people from all the quarters of the earth to work for him and that he paid them better wages than were paid by anyone else, gave his people better opportunities to own their homes and become economically independent than

they had before. Imagine this man living better, building and supporting better schools and finer churches than anyone else, and each year his books showing that he had sold more than he had bought. In other words his trade balance was on the right side of the ledger. We would say that man had been a great success and that he had lived within his income. But suppose, at the end of fifty years, he should take an account of stock and should find that instead of the standing timber that he had inherited, fifty-six per cent. of it had been cut and marketed, and in the meantime he had not taken the pains to reforest the land on which the timber grew, and for the most part the cut-over land was now growing up in worthless briers and brush. Suppose he should find that the minerals which lay near the surface had been mined and sold and that henceforth it would be necessary to operate his mines at greatly increased expense. That, instead of the virgin soil which he had inherited, his land was now washed and worn and in need of rest and repair, and that it would be necessary henceforth for him to use costly fertilizers to crop the land with profit. You would say that this man had not lived within his income, that he had spent his inheritance at a rapid rate. We Americans have done exactly that thing and there never was a time in which we were spending our inheritance more rapidly than now.

A few months ago I attended a national convention where the question discussed was what our trade relations with our customers in Europe were going to be after the awful war now in progress had closed. The president of one of the principal American corporations was speaking, and I pressed the question upon him of what would we sell to the nations that are now at war when peace was declared, and, without so much as a smile, although fully conscious of the real significance of his words, he answered: "Continue to sell them raw materials."

Some years ago it became my duty to look into the affairs of a nation—a small nation—and I found a group of people struggling with a trade balance on the wrong side of the ledger. They were buying five or six million dollars worth more than they were selling and as a consequence they were

short of funds with which to build and support their schools, to build roads and harbors, and to develop their resources.

I found them selling their principal product, raw sugar, at an average price of two cents a pound and buying back from New York all the sugar they consumed as refined sugar at four and one-half cents a pound. The people apparently were not concerned over the fact that this practice was keeping several sugar refineries going in this country and several ships afloat in carrying the cargoes of raw sugar half way around the world to be refined and the cargoes of refined sugar the other half way around to get them back where they started.

These same people were buying nearly three million dollars worth of meat from Australia and New Zealand while one might ride for days through grass up to the saddle skirts and not see a head of cattle grazing in this vast unfenced pasture.

With the balance of trade running against the islands to the amount of several million dollars annually, I found purchases from the outside amounting to some twenty-five million dollars a year, all of which might have been produced at home.

But we do not need to go ten thousand miles away from home to find wastes of even greater magnitude than these. In our own foreign business of which we always speak with pride, although it is the pride of ignorance, we sell to Germany in a normal year about three hundred million dollars worth of goods and buy back from that country about one hundred and seventy-five million dollars worth of materials. At first glance this is good business for us and poor business for Germany. An analysis of our sales and purchases, however reveals the fact that one-half of our exports to Germany consist of raw cotton, much of the rest is iron and steel, coal and oil—raw products which support German industries and give employment to Germany's labor. The largest single item in our purchases from Germany, except chemicals and dyestuffs, is calico prints and embroideries, highly finished and high-priced materials made from the unfinished and low-priced materials which we sold them. Thus we sell Germany raw materials at a low price and buy back finished products

at a high price. Is it any wonder that Germany is pleased with the sort of trade relation which she had with us and which is building up German industries at the expense of our mines, soils and forests?

Another good example is our trade relations with Denmark. We sell that country about sixteen million dollars worth of material a year and buy back between two and three million dollars worth. This seems to be good business for us and poor business for Denmark, but on analysis we learn that an important part of our sales to Denmark consists of corn meal, wheat bran, linseed meal and cottonseed meal. These materials the Danish farmer combines with the coarse products of his own farm to produce fancy bacon, butter and eggs which he sells at a high price. Under this system of buying the Danish farmer has fattened his soil while ours has been depleted. Under the Danish system the acre yield has been increased fifty per cent. within the last twenty-five years. Under our system the acre yield has declined.

Despite enormous export trade and our satisfactory trade balance, is our business really self-sustaining or are we spending a part of our inheritance?

In the institution with which I am connected there are men whose business it is to study critically the effect of the different systems of farming upon the fertility of the soil. A case was recently reported of a tract of land which a generation ago was virgin prairie, but which had then been divided into two fields, one remaining in native grass and the other cultivated to wheat, oats and corn. The plow soil of these two fields, when analyzed by our chemists, showed that the cultivated field had lost in the space of thirty-five years, a third of all the nitrogen it contained as compared with the grass land. Man, in the short space of a generation, had taken out a third of all the nitrogen that nature had been millions of years putting into that soil. In talking this over with a farmer in that community recently, his comment was: "at that rate it would take 105 years to exhaust the soil, and I am not concerned in what happens 105 years hence." I said, "My friend, the first third of the nitrogen is the third that yields a profit in farming; it is the third that enables the

owner to drive an automobile, and to build schools and churches. In taking the second third out the going is hard. It yields a low family income and means poor country roads, neglected country schools and churches. It marks the first step in rural decay. No man has yet devised a system of farming which will support a family while mining the last third of its fertility.'' The profit has already been taken out of that soil.

It is a fair question to put to any community, to any farmer audience anywhere: ''Are you living within your income?'' ''Are you spending your inheritance?'' ''Are you making the conditions less favorable for your children than the conditions which you faced when you were young?''

I said a moment ago that we have been ushered into a new era of high cost of living, but we lived in an era of low cost of living long enough to take on many extravagances and we are bringing into this permanent era of high cost of living wasteful ways of doing business and costly ways of living. We insist upon advancing the season all the way from two to six months. We buy new potatoes from Texas and Florida long before we have planted the potatoes on our own home garden. Fresh strawberries are a staple article of diet on our tables before we have removed the winter mulch from the vines in our family grounds. We eat lettuce, raddishes and the like throughout the winter which have been grown in hothouses and in ways as expensive as are employed for growing violets and roses.

In making our purchases we give no thought to the development of local community or the building up of home industries. We need to work together in all of our business, as has already been suggested by several of the speakers this evening.

To illustrate what I mean, there is in a country town of my State a little broom factory, in which I am told good brooms are made. The proprietor told me that he had great difficulty in finding a market locally for all of his product; although there are bales of brooms shipped into that town from Michigan every month. Kansas is one of the leading broom corn producing States in the Union and this Kansas

brush is sent to Michigan to have a handle put on it. The broom is shipped back to Kansas to be worn out and the handle is thrown away. (Laughter.)

The other day, on the streets of my home town, No. 1 Winesap apples from farmers' wagons were going begging at a dollar a bushel. I called up the grocery store and learned that No. 2 Colorado Jonathans were moving steadily at two dollars and a half a bushel. It was not because the consumers had any objection to using home-grown apples, or of buying from the farmers, but they had fallen into the habit of stepping to the telephone and asking the grocer to send out ten cents worth of apples and charge it to their account. (Laughter.)

The farmers are no less to blame than are those who live in town. For example, the other evening I took supper at the home of a successful farmer in Kansas, and we had cold, boiled, sliced ham, which the farmer had bought at the butcher shop, already boiled and sliced. (Laughter). I knew the family well enough to discuss this matter with them, and there wasn't an article on the table that had been produced on the farm. The butter had been brought from Nebraska, the cheese from Wisconsin, the bread from the town bakery, and the pickles and preserves from the local grocery. That particular farmer could afford it. He was shipping food from his farm in car lots in the form of wheat, fat cattle and hogs, and was living out of the grocery store and butcher shop in town. But unfortunately the young man who is in debt for his farm is trying to imitate him in his way of living. Indeed, as a general proposition it is not a good way for any of us to live. What we all ought to try to do is to live at home and board at the same place. (Laughter.) Every farmer ought to strive to make the farm self-sustaining. We all should work together to eliminate the waste which has crept into our ways of living and in our ways of doing business.

Wastes Are a Tax upon the Cost of Living.

Wasteful ways of doing business and extravagant ways of living are a tax upon the cost of living which somebody must

pay. Either the consumer must pay more for what he eats, and he already groans under the burdens of high cost of living, or the farmer must take less for his products, although he already is the lowest paid man in the world.

The American farmer is a business man and not a mere laborer. He has invested in land, equipment and working capital an average of approximately $8,000.00, an investment such as fairly classes him with the business man of the town. He is entitled, therefore, to an income comparable with that of the average business man, an income which will enable him to support his family as well and to enable him to pay as much toward the support of the school, the church, roads, and the cultures of life as do the proprietors of grocery stores, drug shops, meat markets and of other business enterprises requiring no larger investment and no greater intelligence.

If society cannot pay the price for food which will yield to the farmer a fair income, it is time society was looking into its ways of living and doing business with a view to effecting such economies as will make this possible.

The Responsibility of the Farmer.

And now as to the farmer himself, I don't mean to create the impression that he has any right to loaf on his job. He must not think that he is privileged to farm as he pleases, and ask any price for his products which he thinks is right. The world doesn't owe him a living and if it did there is only one process by which he can collect the debt and that is by being a hundred per cent. farmer and citizen. The farmer will have to put forth his best efforts, and farm with the highest efficiency, and work as hard and as intelligently as anybody else, if he is to make the right sort of living and is to discharge his full obligation to society. Society will not protect the farmer in his artificial right to own land and determine its descent when he dies, regardless of the use to which he put the land.

The American farmer needs to become more interested than he has been in his profession. He needs to develop great

enterprises of his own and to create in agriculture great honors and bestow them upon the most worthy of his own class. This is the only way by which young men of great ability will be attracted to agriculture. Why do you suppose it was that Mr. Mudge, later president of the Rock Island Railway System, left a job on the farm at seventy-five cents a day to become water boy in a railroad camp at thirty-five cents a day? Even as young as he was he realized that the railroads rewarded their own men with their big jobs. The farmer hasn't yet learned this lesson. He hasn't developed great honors and great prizes yet because he hasn't been interested in great enterprises. What the farmers of Maryland need to do is to get behind their Agricultural College; their farmers' organizations such as this one, and develop them to the point where they are among the greatest enterprises in Maryland. Great honors are thereby created to be bestowed upon the young men in the profession. Then such young men will stay in agriculture because they see attractive prizes ahead.

The farmer needs to respect himself and his calling more than he does. Do you know what the farmer thinks of himself? Let me tell you. At a convention at St. Joseph, Missouri, a few years ago the late W. C. Brown, president of the New York Central Railroad, was the principal speaker. Mr. Brown was a successful farmer, and one of the most successful railroad men in the country. In his address he sought to idealize agriculture. He paid a beautiful tribute to the profession, telling how the farmer might find in his occupation the highest joys, the greatest profits, and the untainted beauties of an unselfish life. When he had finished there was a ripple of applause from the gallery, where the ladies sat, the wives and daughters of the traffic managers of railroads and of bank directors, who had come out to hear Mr. Brown. Before the speaker there sat in the pit three thousand of the most experienced and successful farmers of Missouri, Nebraska, Iowa, and Kansas, and from them there was not a ripple of applause. Either they didn't believe what Mr. Brown had said about their business, or they didn't care. If it had been a labor union meeting instead of a farmers' meet-

SPLENDID VEGETABLE EXHIBIT, 1916

ing, and a man of Mr. Brown's prominence had paid such tribute to labor as he paid to agriculture, the audience would have shaken the building with applause.

A people never rise above their ideals. It is what a man thinks of himself and his work that counts for most. Indeed, the effort to live up to a good name, bestowed perchance by some misguided friend, has been the means of making many a good man. Give an occupation a good name and it is a better occupation therefor.

In recent years the laboring man has become greatly interested in the cause of labor. He has learned the advantage to him and to the cause of labor of bestowing upon the people of his own class whatever prizes he has to bestow. He is easy to organize, too easy sometimes. But it was only when the laboring man had respect for labor that he was able to cope successfully with his age-old enemy, his employer.

The producer, the man on the soil has not yet learned this elementary lesson in self-preservation. He is difficult to organize, impossible to lead. He idealizes every occupation except his own. To him the open country holds no romance. To the farm boy, the heroes are all in the city. As a result, the world accepts the farmer at the farmer's estimate of himself.

Thus opportunities for the rural people equal to those of the town peaple and the power and inclination of the rural people to live up to their opportunities, or to phrase it more tersely, income and idealism, are the two elements out of which a stable and sustaining agriculture will be built. The Maryland Agricultural Society, having for its object the advancement of agriculture in this commonwealth, cannot afford to exalt one of these elements above the other.

MR. CARL R. GRAY: I would just like to say this, ladies and gentlemen. Thursday night Dr. Kerr, the president of the Oregon Agricultural College, and Dr. Pearson, the president of the Iowa Agricultural College, will speak in this hall. You will profit very much, I am sure, by coming to hear them. Good night.

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NOVEMBER 16, 4 P. M., 1916.

The meeting was called to order by Mr. J. P. Burdette, President of the Crop Improvement Association. The Secretary explained that Mr. S. M. Shoemaker, President of the Agricultural Society was unavoidably detained.

CHAIRMAN J. P. BURDETTE: This meeting is held to consider such business as is to come before the Society and the election of officers for the ensuing year. We will first have the report of the Secretary-Treasurer.

SECRETARY SYMONS: Before submitting my report I will read a statement which President Shoemaker desired that I present to the meeting for him.

ADDRESS.

SAMUEL M. SHOEMAKER, President Agricultural Society, Eccleston.

To The Members of the Maryland Agricultural Society:

Gentlemen:

It would seem to be proper at this time to give a short account of what has been done since our last annual meeting.

After consultation with the State Grange, your officers invited practically all organizations interested in agriculture to send representatives to a conference where the needs of the College and agricultural matters generally might be considered, and a definite plan of action undertaken.

The final results obtained from the Legislature exceeded the expectation of the most optimistic; for while the appropriations were not all they might have been, there was an increase in the amount for the support of the College—$174,000.00 for a much needed building, and an entirely new appropriation for the Extension Work in cooperation with the Federal Government.

So many of our good friends worked so hard and so effectively, that I hesitate to mention any. I feel, however, that we should record the faithful services rendered by Mr. Frank N. Hoen, of the Merchants and Manufacturers Association;

Dr. Steffens and Mr. Hecht, of the City Wide Congress; Mr. Skinner, of the College Alumni Association; Mr. Robert Crain, of the College Trustees; our Vice President, Col. Sisk, and Mr. Charles G. Summers, Jr., representing the canning industry.

The State's officials, Mr. John M. Dennis, Treasurer; Mr. Hugh A. McMullen, Comptroller; Senator Orlando Harrison, and Representatives Mitchell, Blandford and Byrn were also especially active workers.

It is not to be inferred from this that our affairs did not have the most kindly interest and helpful support of practically every member of both Senate and House.

Every one should know how earnestly interested the Governor is in advancement of the agriculture of the State. Former Governors have taken a friendly interest in the farmer's welfare, but Governor Harrington seems unwilling to leave anything undone that can be of real service to the farmers, and I feel we cannot do better than encourage him to succeed himself just as often as he is willing.

I presume you would like a word as to the work of the Board of Agriculture.

The details for the plans for the new agricultural building at the College are now being prepared, and it is expected that bids will be asked for its erection in the very near future.

The Board has practically completed a number of needed regulations concerning the control of live stock diseases, and these will soon be ready for promulgation and distribution.

Conferences with the State, and with the Baltimore and Washington health authorities, looking to the standardization of dairy farm inspection, are now being held, and it is hoped that real benefit may result to that great industry.

At the last session of the Legislature provision was made to have The General Educational Board of the Rockefeller Foundation study and report on all collegiate institutions receiving financial support from the State. Through the courtesy of the Educational Survey Commission our Agricultural College is to be taken up first, and as soon as the re-

port on it is received the Trustees will formulate the policies for the future government of the College.

Now a word as to this society. In its short life it has at least made possible a very great improvement in all agricultural matters of the State; but this should only be a beginning of the Society's work. Representing, as it does, the different branches of agriculture, it should be the constant friend and adviser of the State Board. On Tuesday evening both the Governor and Senator Harrison laid great stress on the need for the cooperation and support of every man interested in the successful work of the Board. This cannot be too strongly emphasized. It should be, and I am sure will be, your constant aim not only to keep up the standard of these splendid exhibits of Maryland products, but to keep high ideals before the farmers of the State.

I believe this Society's greatest usefulness will be attained if its officers are not members of the State Board of Agriculture, but it is with real regret that I ask you to elect my successor. I told you last year that the honor of being President of this Society was the one I would most rather have, and it is one that I shall always remember with pride.

In closing, let me ask once more for the State Board of Agriculture the earnest cooperation of each one of you.

REPORT OF THE SECRETARY-TREASURER.

T. B. Symons, College Park, Maryland.

Mr. Chairman and Members of the Society:

This marks the first aniversary of the Maryland Agricultural Society. The saying, "History repeats itself" is aptly illustrated in the formation of this organization. A review of early literature recalls the fact that the first Maryland Agricultural Society was formed in 1818. I will add to this report a short historical statement regarding the early organizations that were formed which I believe will be interesting to the present members.

I believe the wisdom of forming the Agricultural Society as a central or holding organization for our affiliated asso-

ciations has been more than justified, even during the first year of its history.

As Charles B. Calvert is recorded as the champion of progressive agricultural education in his day, as President of the Agricultural Society, so will Samuel M. Shoemaker go down in modern history of Maryland as the leader in organizing our agricultural agencies for more effective work in the further development of our agricultural resources.

There is no doubt in the minds of all persons that it was only by the complete unity of our agricultural associations, through this Society, that the agricultural interests were so successful in securing the almost miraculous amount of desirable legislation from the last General Assembly. It is the most striking demonstration of recent times of what farmers can accomplish by united effort. We were fortunate in securing an increased appropriation for our Maryland Week meeting and exhibition.

On three occasions during the past few years Orlando Harrison has taken the lead in securing support for this agricultural event and for the affiliated associations. The Society owes him a debt of gratitude for his untiring efforts in behalf of this and allied interests.

It may be stated here that the State appropriation is still made to the Horticultural Society, as the Agricultural Society was not incorporated when the budget was prepared by the Legislature and it was believed that this was the most expedient course. The Executive Board of the Society, however, recognizing these conditions has ruled that all funds can be used in promoting Maryland Week and the affiliated associations.

I believe that every one agrees that the exhibition this year far surpassed previous efforts, and I believe that the significance of Maryland Week is growing more and more important to the people of the State.

In this connection we are indebted to the press of the City and State for the publicity given the meetings and exhibition, and especially to the Baltimore Sun and the many good citizens throughout the State for the wonderful success of the Home State Tour for the boys and girls who were prize

winners in the Club Work in the State. I feel sure that this tour will be an incentive to the farm boys and girls for greater efforts in the future and, it is pleasing to have the tour end with the boys and girls club night at Maryland Week on Friday evening.

As Treasurer I beg to report a balance in the treasury at the end of the fiscal year, September 30, 1916, of $81.64. Total receipts amount to $7,350.45, with expenditures amounting to $7,274.81. The accounts and vouchers have been audited by a committee appointed by the Horticultural Society. When you realize that the appropriation for the past has been $3,000 per annum you can appreciate what must be raised from other sources to conduct the show and meetings. We aproach the new year with accounts paid to date.

In closing this report I wish to express my appreciation to President Shoemaker and the members of the Executive Council for their earnest support in conducting the work of the Society.

Historical Statement.

I am indebted to Mr. W. M. Hillegeist, of the Extension Service, for securing the following data regarding the history of the Agricultural Societies that have been formed from time to time in this State.

From history of Talbot County, Maryland, by Oswald Tilghman, the following is taken: A society for the promotion of agriculture and rural economy for the Eastern Shore of Maryland was organized September 9, 1808, at Easton, with Nicholas Hammond as the first President. He states that "This Society was the first organization of its kind in Talbot County, probably the first in the State and certainly among the first in the United States." There is no evidence that this Society maintained an existence for any great length of time.

According to Tilghman, the first attempt to form an Agricultural Society for the State of Maryland was in 1818.

In the first issue of the American Farmer, 1819, reference is made to this Society. In volume six of the American Farmer, 1824, is given the Act incorporating the Maryland

Agricultural Society, including the constitution, which was passed at the December session of the General Assembly, 1823, and of which the following is a copy:

AN ACT TO INCORPORATE THE MARYLAND AGRICULTURAL SOCIETY.

Passed December Session, 1823.

WHEREAS, Sundry persons, citizens of the State of Maryland, have formed themselves into a society for the promotion of agriculture and of family domestic manufactures, upon the terms and conditions and under the regulations and provisions set forth in the following articles of association, viz:

We, the subscribers, do hereby agree to associate ourselves under the style and title of the Maryland Agricultural Society.

ARTICLE 1. The object of this association is the promotion of agricultural and of family domestic manufactures.

ART. 2. The officers of this society shall be a president, a vice-president, a recording secretary, a corresponding secretary, an assistant recording secretary, a professor of agricultural chemistry, a professor of botany, a treasurer, an assistant treasurer, and two collectors, one for each shore, twenty-four trustees, and such other officers as the by-laws of the society shall from time to time direct; all officers, where not otherwise directed, shall be chosen by ballot, to serve until the close of the next exhibition, and then and thereafter be annually elected at the meeting held on the Western Shore, in the month of November, or such other month as may be found to be convenient.

ART. 3. The duty of the president shall be to preside at all meetings, to direct such correspondence as may be necessary, to superintend the affairs of the society, and to make such communications as from time to time may be deemed useful.

ART. 4. The vice-president in case of the absence of the president, shall fulfill his duties; and in case of the absence, death, or resignation of any officer, the society shall have power to appoint in his place a member to act until the appearance of such absent officer, or in case of death, or resignation, until another officer shall be duly elected.

ART. 5. Twenty-four trustees shall be elected, of whom twelve shall be from the Western Shore, and twelve shall be from the Eastern Shore, to be elected by the members of each shore, respectively; they shall meet as often as their respective chairman, or any two members may deem it necessary, and any three members shall constitute a quorum: the trustees shall from time to time examine in person the management and condition of such farms as they may consider objects worthy of their attention, and they shall make report to the society of such as may merit their approbation; they shall severally take charge of all the property and articles of the society, on their respective shores, the books and papers of the other departments excepted; it shall be their duty to take the most efficient measures for collecting and distributing the best samples of all the useful grains, roots and seeds; for collecting all fossils, marls, earth, or substances, proper for manure; for causing the same to be analyzed, and report the result to the society; for procuring experiments, to be made by careful agriculturists, of all such fossils, marls, earth, or substances; for collecting models of the best agricultural implements,

and to report their properties and usefulness; to designate from time to time all subjects and objects for which premiums should be offered, and to fix and declare the several premiums for the same; to appoint committees to examine into the merits of, and report on all claims for premiums; to designate the time and make the requisite preparatory arrangements every year for the meeting of the society, and to keep regular minutes of all their proceedings; the trustees of each shore shall have power to fill up from time to time such vacancies as may occur in the respective boards.

ART. 6. The assistant secretary, the assistant treasurer, and the twelve trustees for the Eastern Shore of Maryland, shall be chosen at a meeting to be called on that shore, by the vice-president; and when so chosen, shall serve until the close of the next exhibition on the Eastern Shore; and the trustees for said shore shall then and thereafter, be chosen annually.

ART. 7. The society shall have power to make such by-laws and regulations, as they shall from time to time deem necessary for carrying into effect the objects of the institution.

ART. 8. Every member on joining this association, shall pay to the treasurer, or to the assistant treasurer, a sum not less than two dollars; and shall annually thereafter at the time of the annual meeting of the society, pay a sum not less than two dollars, so long as he may continue to be a member of said society.

ART. 9. All expenses incurred in the procuring of premiums to be distributed by the society at their meeting on the Western Shore, and all expenses incurred by the trustees in the preparatory arrangements for such meeting, or otherwise, shall be paid by the treasurer, under an order signed by the president, and countersingned by the corresponding secretary; and all expenses incurred on the Eastern Shore for premiums, or otherwise, as aforesaid, shall be paid by the assistant treasurer, under an order signed by the vice-president, and countersigned by the assistant recording secretary.

ART. 10. At every meeting of the society, the president or the vice-president attending, shall with the members present, form a quorum.

ART. 11. The society shall consist of inhabitants of the State of Maryland and of the District of Columbia, friendly to agriculture; and provision shall be made for the election and admission of honorary members: *And whereas,* sundry members of the said association have prayed to be incorporated by law—Therefore,

SEC. 1. *Be it enacted by the General Assembly of Maryland,* That all and every person or persons who at the time of the passage of this act, may be, or shall hereafter become members of said society, be, and are hereby created a body politic, and corporate by the name, style, and title of the Maryland Agricultural Society, and by the same name shall be able to sue, and be sued in all courts of law or equity; and to make and have a common seal; and also to ordain and establish such by-laws and regulations, as shall appear necessary for regulating the concerns of the said corporation; and may hold property, real, personal, and mixed, not being contrary to this act or to the constitution of this State: *Provided always,* that the same shall not exceed, exclusive of the sums by this act contemplated to raise, the annual sum of one thousand dollars.

2. *And be it enacted,* That the rules and regulations set forth in the above recited articles of association shall be, and are hereby declared to be a part of this act of incorporation, and shall be and remain the rules and regulations of said body corporate until it shall be found expedient to amend the same: *Provided,* That the

next and all subsequent meetings of the society on each shore, shall be on such days and at such places as from time to time shall be designated and notified by the trustees of such shore.

3. *And be it enacted,* That the Maryland Agricultural Society shall be, and is hereby authorized and empowered by its trustees, or other officers by them designated for the purpose, to define and fix bounds and limits of sufficient extent for the erection of its cattle pens and yards and for convenient passageways to and about the same, on the days of its annual cattle shows and exhibitions, and also for its ploughing matches and trials of working oxen; within which bounds and limits, no person or persons shall be permitted to enter or pass unless in conformity with the rules and regulations of the trustees or other officers of said society; and if any person shall enter or pass within the bounds and limits thus fixed and defined as aforesaid, contrary to the rules and regulations of the trustees, or other officers as aforesaid, after he shall be notified thereof, he shall forfeit and pay a sum not less than one dollar, nor more than five dollars, to be recovered before any justice of the peace of the county, in an action on the case at the suit of the treasurer of said society, to the use of the society aforesaid: *Provided, however,* That nothing herein contained shall be construed to authorize such society to occupy, or include within their limits as aforesaid, the estate of any person or persons without the consent of the owners thereof, or to occupy any public highway in such manner as to obstruct the public travel therein.

4. *And be it enacted,* That for the purpose of enabling the society as aforesaid, to give greater efficiency to the rules and regulations of their respective officers, for the preservation of good order on the particular occasions of its public cattle shows and exhibitions, the trustees of the said society shall be, and are hereby authorized to nominate and appoint a sufficient number of suitable persons, who shall be inhabitants of the county, to act as marshals, who shall be sworn to the faithful and impartial discharge of their duty, and shall have the same authority in relation to the preservation of the public peace, and to the service and execution of criminal process, within the limits prescribed for the holding of such shows and exhibitions, as constables by law now have; and they shall exercise their said office from twelve o'clock, at noon, of the day preceding the day of the commencement of said shows and exhibitions, until twelve o'clock, at noon, of the day succeeding the termination thereof, and no longer.

5. *And be it further enacted,* That whosoever from, and after the passage of this act, shall erect a booth, or other arrangement for the purpose of selling, or shall sell or dispose of any spirituous liquor within one mile of the grounds defined and fixed for the holding of the annual cattle shows and exhibitions, as provided for in this act, without permission granted in writing, signed by the chairman of the board of trustees and countersigned by the corresponding secretary of said society, said person or persons so selling, or disposing of spirituous liquors, shall forfeit and pay the sum of forty dollars, to be sued for before any justice of the peace by the treasurer of said society, and paid to him for the benefit of said society: *Provided,* That this act shall not be construed to effect any person or persons resident within the said prescribed limits, who may be authorized to sell spirituous liquors, in any other manner than to prevent them from erecting a booth or booths, or other arrangement for the purpose of selling said liquors.

According to Tilghman, the Board of Trustees of the Agricultural Society of the Eastern Shore is the surviving representative. This is now a local organization in Talbot County. As provided in the constitution this association held a Fair in Talbot County and then at Baltimore, 1823. According to records this was principally a live-stock exhibition.

In 1848, according to the American Farmer, a revival of interest in agriculture by the leading citizens of the State is recorded. Chas. B. Calvert, of Prince George County, President of the Agricultural Society, with Samuel Sands of Baltimore County, as Secretary, made the Society an important factor in developing the agriculture of the State. The exhibition and meetings of the Agricultural Society, which were held in Baltimore in November, continued until the Civil War, about 1861. It was during this period that the Agricultural College was founded, 1856. Also during this period various county agricultural societies were formed, holding meetings and exhibitions at the respective county seats. Later, 1866, according to the American Farmer there was formed the Maryland Agricultural and Mechanical Society, an association according to reference here and there that held exhibitions at Pimlico. This apparently developed into a race-meet.

The Agricultural Society of Baltimore County was formed in 1878. Samuel M. Shoemaker of Burnside Farm, father of the present President of Maryland Agricultural Society, was a member of the first board of directors.

The foregoing is interesting when compared with the present day organization, and the reason for its formation.

Let us hope that the present society which has been formed as a central organization for the affiliated associations and which is now so well established, will continue to live and serve the interests of the great agricultural industry of the State.

CHAIRMAN J. P. BURDETTE: We will now have the report of the Executive Council.

SECRETARY T. B. SYMONS: I might say, Mr. President, that the constitution of the Agricultural Society provides that the Executive Council, which is composed of the offi-

cers of the four affiliated societies, submit a list of nominations to the general meeting of the Society, but the constitution clearly points out that this does not exclude the possibility of any other nominations being submitted at this general meeting. I submit as Secretary of the General Council the following report, which was authorized at a meeting of the Council held Wednesday evening, November 15th.

"The following persons were duly nominated and respectfully submitted by the Council to the general meeting of the Society to serve as officers for the ensuing year."

For President, Orlando Harrison, Berlin, Md.

Vice-President, Asa B. Gardiner, Baltimore, Md.

Secretary-Treasurer, T. B. Symons, College Park, Md.

CHAIRMAN J. P. BURDETTE: Are there any other nominations?

MR. A. B. TWINING: I move the nominations be closed and that the nominations be put to a vote.

A MEMBER: Second the motion.

CHAIRMAN J. P. BURDETTE: It is moved and seconded that the nominations be closed. All those in favor of the motion will say "aye"; opposed "no". The chair declares the names suggested elected.

MR. A. B. TWINING: I move the Secretary be instructed to cast the ballot of the Association for the election of the officers suggested.

A MEMBER: Second the motion.

CHAIRMAN J. P. BURDETTE: It is moved and seconded. Are you ready for the question? All in favor of the motion will say "aye"; contrary "no." The motion is carried.

(Secretary Thomas B. Symons cast the ballot of the Association at this point for the election of officers, excepting Secretary, for the ensuing year.)

CHAIRMAN J. P. BURDETTE: I will cast the ballot for Mr. Symons as Secretary. I declare those names elected as officers for the ensuing year.

CHAIRMAN J. P. BURDETTE: If there is no further business, the meeting will stand adjourned until 8.00 P. M.

THURSDAY, NOVEMBER 16th, at 8.15 P. M.

Meeting called to order with Samuel M. Shoemaker, President, Maryland Agricultural Society.

PRESIDENT SHOEMAKER: Ladies and Gentlemen, it gives me pleasure to introduce to you as Chairman of this evening's exercises, Mr. B. Howell Griswold, Jr., President of the Baltimore Board of Trade. Mr. Griswold.

REMARKS BY PERMANENT CHAIRMAN.

B. HOWELL GRISWOLD, JR., President Board of Trade.

Ladies and Gentlemen:-

On behalf of the Board of Trade of Baltimore City, representing many thousands of our business men, I extend to you a most cordial greeting.

Many a man who thinks superficially seems inclined to believe that there are fundamental differences in character between the business man engaged in commerce and the farmer who is the real producer. The more I see of life and the more I see of men, the more I realize how little environment or daily pursuits actually change them. Human nature has been the same so far as we can judge, ever since the first human emotion was recorded.

Take a hundred men from each of several occupations and throw each group into separate melting pots. Boiled down there will remain just about the same amount of the fundamentals of honesty and sincerity, of ability and common sense, of humor and love of fun.

And so I wish that our business men had greater opportunity to come into closer touch with you gentlemen from the counties. It would be beneficial to both of us. I am sure we would find that we have much in common, swap about the same kind of lies, drink about the same amount of things that ought to be prohibited, have about the same kind of emotions and like about the same kind of things.

You rather have the advantage over us, I think. I know many good business men who would like to become farmers,

but I have never heard of a good farmer who really wanted to become a business man.

Farm life is supposed to be dull but as a matter of fact I imagine the farmer goes through more sensations in a year than the average business man could stand. The farmer is the greatest speculator of them all. He knows when he goes to bed that he may wake up the next morning with his whole season's income destroyed. He has the business man beaten to death on excitement and speculative possibilities. Every time the business man has a streak of bad luck, the longing for the farm comes over him and yet he has sense enough left to know that with his training he cannot afford to become a farmer until he is in position to lose a lot of money without losing an equivalent amount of sleep.

The love of the farm seems to have pervaded all civilized nations. Cicero said:

"Of all pursuits from which profit accrues, nothing is superior to agriculture, nothing more productive, nothing more enjoyable, nothing more worthy of a free man."

Job was a great farmer. He had 500 yoke of oxen. It was his experience in farming which doubtless taught him his patience.

The Egyptians made their ground and raised corn; the Hebrews raised herds and made money; the Romans made laws and raised temples, while at the same time, our ancestors in the wilds of Europe made havoc and raised "hell".

It is only when a man or a people sit down to cultivate the soil that he or they become really civilized. And it is only as agriculture becomes more scientific, that we evidence the progress of civilization. A nation may be so bountifully blessed with virgin soil that it may seem to be able to waste it without exhaustion, but the point of exhaustion must come and to the extent that this is foreseen by a people and prevented, to that extent is a nation truly progressive. Evidence of foresight is the most accurate test yet devised for measuring the degree of civilization attained by a people.

The Board of Trade of Baltimore would have nothing to trade in if the farmers did not dig the raw material from the soil. The merchants and manufacturers must always look to the farmer for his supplies.

Every now and then we say to ourselves that there are fundamental differences between the counties and the City that cannot be amicably settled. The differences so far as I have been able to see, are differences not in substance, but in point of view. They are to a considerable extent the product of politics. Sow politicians and you will always harvest a crop of dissension. No matter what the weather, no matter what other kinds of pests we may have around, we are apt to have this kind of crop at least once a year. It lasts fortunately for a couple of days only in the year. During these 48 hours we may be led to believe that there is something crooked about a city man or something dull and selfish about a county man that needs correcting. We may think so around the polling places but when we go back to our homes and recall our friends in the City or counties and see how much alike we all are, and know that we all live within the geographical limits of one of the smallest but at the same time one of the finest states in the Union, we know perfectly well that when the band plays "Maryland, My Maryland," we shall all stand up and shout together.

We know in our hearts that such differences of opinion and conflict of interests as exist can readily be solved by our sense of justice, supplemented by a spirit of liberal dealing and we are going to solve them in that way.

And so gentlemen, on behalf of the business men of Baltimore, I say to you that we are anxious to help you work out your problems in any way that we possibly can, not only with the spirit of friendship but because we know that your prosperity means our own prosperity and our own happiness as well as yours.

The past six months have seen a wonderful development industrially in the neighborhood adjoining the Port of Baltimore. Plans have already been announced—soundly financed plans for the expenditure of over $100,000,000 for new industries or the extension of those already in existence in and around Baltimore. Additional plans for several new industries on a large scale will probably be announced within the next few days. We want to see the agricultural interests of the State placed on the same progressive basis. Industry is

forging ahead. Let us now turn and help agriculture. All of us want to help, and we want you to get into the habit of calling on us for help.

The day is upon us when all of the elements of our population in city and state must forget their small differences and face in one direction. That direction will lead to the material and moral welfare of the whole state. And the men who lead it will be those who present to us a sound program for the development of our material resources, who are honestly and vitally interested in the proper education of our children, who set principles above expediency and patriotism above profit. With that kind of leadership, Maryland will come into her own.

I now take great pleasure in presenting Dr. W. J. Kerr, President of the Oregon Agricultural College, who will address you on the subject,—"The Agencies for the Advancement of Agriculture." Dr. Kerr.

AGENCIES FOR THE ADVANCEMENT OF AGRICULTURE.

By Dr. W. J. Kerr,

President Oregon Agricultural College.

Mr. Chairman, Ladies and Gentlemen: I have had a great deal of pleasure in looking over the splendid exhibit you have here of the agricultural products of Maryland, and in meeting so many of the prominent people of your city and state. I have been particularly impressed by the fact that the presiding officer this evening is President of the Baltimore Board of Trade and by his explanation of the interest which the people of the city have in the development of the country, and the people of the country in the development of the city. It is not an unusual thing at this time in any part of the United States to have a representative of the business interests of a city preside over a meeting of farmers, manufacturers, bankers, merchants. It is now recognized that whatever

our vocation, our interests are largely mutual, interdependent.

But this has not always been true. This country is coming more and more, for instance, to recognize the fundamental importance of agriculture—that the public in general, and not the farmer in particular, is interested in agricultural progress. Never before in the history of the country has there been greater interest than at the present time in the advancement of agriculture. During recent years, particularly, has there been a great awakening to the importance of agriculture as the basis of national prosperity, in promoting the general welfare. More and more are the people coming to realize the vital, intimate relationship between the rural and the urban population. The time once was when various commercial organizations concentrated their efforts upon the development of the enterprises within the city, without regard for the importance of developing the contiguous farming country as a means of promoting the permanent growth of the city. During recent years, however, there has come more general recognition of the fact that most cities, at least, are largely dependent upon the prosperity of the people on the farm. There is now more interest, therefore, among all people in the different agencies established for the development of the agricultural resources of the country.

In passing to what I have in mind to say particularly, it may be well to call attention to a few facts which indicate the relative importance of agriculture and some of the problems pressing for solution in the development of the economic interests of this country. We have in the United States, in round numbers, about 1,903,000,000 acres of land. Of this, 935,000,000 acres are arable; but of this latter, only about 478,450,000 acres are actually under cultivation, with only 319,000,000 acres in crops. It will be noted, therefore, that only a little more than one-half the arable land of the United States is improved, and about one-third in crops each year. The farm properties of the United States aggregate in value some $42,000,000,000. The value of farm products, crops and live stock, is now about $10,000,000,000 each year.* Of the 6,500,000 farms in the United States, about 66 per cent. are operated by the owners, 34 per cent. by tenants.

*For 1916 the amount is upwards of $13,000,000,000.

By way of comparison, it may be noted that there are in the United States upwards of 330,000 manufactories, with a capitalization of about twenty-five and one-third billion dollars. These employ 9,500,000 people, use annually $16,500,000,000 worth of raw material, while the manufactured products, according to the latest statistics, aggregate in value about twenty-seven and three-fourths billion dollars. The transportation lines in the United States are capitalized at nearly twenty billion dollars, with gross earnings, passenger and freight, amounting to some three billion dollars.

During the fiscal year ending June 30, 1915, the exports of agricultural products amounted to $1,470,000,000. It may be noted also that agricultural products constitute more than 40 per cent. of the raw material used by the manufactories. Hence the vital relationship between the manufacturers and the farmers; and between the bankers, merchants and those directly engaged in the industries. Railroads extend their lines only where the business, freight and passenger, present or prospective, will justify the investment. It is on this basis, also, of meeting a real need, that public highways are extended and improved. Factories are built in places of accessibility to the raw material required, and where the demands for the manufactured products are such that the returns will insure reasonable dividends; and so on, all along the line. And this relationship among all these various activities is now generally recognized.

It is true, however, that until comparatively recent times the business men, bankers and manufacturers generally have not taken active interest in promoting the development of agriculture. It was but a few years ago that the National Bankers' Association organized a campaign for the advancement of agricultural education. The State Bankers' Association of Oregon, in 1912, provided funds with which the boys' and girls' industrial club work of that State was inaugurated. In fact, it was this organization that supported the club work until provision for it was made a year later by the State Legislature. The Commercial Club of Portland, Oregon, was most active in the campaign which resulted in the passage of the law providing for the permanent financial support of extension work in agriculture and home economics

in that State. In fact, at that time the city organizations were more active in promoting agricultural development and the improvement of conditions generally throughout the open country than were the farm organizations. This is not true at the present time, however. Farm organizations generally, throughout the entire country, are now actively supporting any and all agencies for the improvement of conditions on the farm and in the farm home, and in promoting the general prosperity and happiness of rural people.

As an indication of the increased interest in the development of agriculture, attention may be called to the fact that while as late as 1909 the Federal appropriations to the United States Department of Agriculture amounted, in the aggregate, to less than $12,000,000, in 1915 these appropriations had increased to about $20,000,000. And for the present year, according to a report received from the United States Department of Agriculture, these appropriations amount to more than $37,000,000. Of this amount $1,242,000 was appropriated to the Office of Markets and Farm Organization. Further evidence is found in the advancement of the land-grant or agricultural colleges, established in pursuance of the Morrill Act of 1862. There is at least one of these colleges in each state. The total income in 1905 was $13,300,000. But ten years later, in 1915, the income amounted to $42,500,000. Of this amount, $32,000,000 was for resident instruction, $6,400,000 for experimental and research work, and about $4,100,000 for the extension service. It may be a surprise to some of you to know that as late as 1905, according to the reports of the United States Bureau of Education, the total number of students in agriculture in all of the agricultural colleges of the United States, was 2,473. In 1905, only 2,473 students in agriculture in all the land-grant colleges of this country! But eleven years later, this year, there are nearly as many such students in a single institution. The number increased during the five years, 1905 to 1910, to about 7,000. In 1914 it was more than 14,000. And, as stated by the Secretary of Agriculture in his address in Washington yesterday, the total enrollment in agriculture this year, in all the agricultural colleges, is about 30,000. This is an indication of the rapidly increasing interest throughout this country in agricultural education.

There has been a corresponding advance in the agriculture of this country during these years. It is well known, for instance, that the farm machinery and implements used in the United States are superior to those used in any other country in the world. It is true, however, that in the United States there is not the yield per acre of certain crops that is secured in some of the foreign countries. For example, our wheat yield is only about fourteen or fifteen bushels to the acre, whereas in Germany the average is about twenty-eight bushels; in England, thirty or thirty-two; and in the Netherlands, thirty-four. But we should not attach too great importance to this fact. The factor of yield per acre is not the only one of importance. The real question is one of net return, and, while we are not securing as great yield per acre, we are, as a matter of fact, according to the most reliable statistics, securing greater returns per unit of labor and upon the capital invested, than are received in some of the countries to which reference has been made. However, the fact that our average yield—and I mention that merely as an illustration—is less than half that secured in some other countries is an indication of the possibilities ahead in the development of agriculture in this country.

Again, notwithstanding all the advancement that has been made during recent years, the fact is that even yet our annual loss, as a result of lack of understanding on the part of the farmers of the problems encountered in their work, aggregates hundreds of millions of dollars. You would be interested, but there is not time for me to enumerate the losses in different lines. May I mention just one or two things. Some years ago in California large areas of pear orchards had to be taken out, completely destroyed by fire blight, involving a loss of hundreds of thousands of dollars, and the practical bankruptcy of many men otherwise prosperous. Through the work of research and investigation, however, on the part of the Department of Agriculture and the state experiment stations, this pest has become understood to an extent such that it can now be largely controlled, and as a result there are many thousands of acres of pear orchards which are maintained at a profit to the owners.

The San Jose scale is another pest that at one time threatened the destruction of the orchards of this country, particularly in the Western States, but by the application of science, the San Jose scale is now under control. The same is true of many other pests—the coddling moth, the apple tree anthracnose, the cherry tree gummosis.

Many difficulties are encountered in agriculture. It is perhaps true that the farmers have to contend with more real problems than may be found in almost any other industry. There are serious pests of one kind or another to contend with, plant diseases, insect pests. We scarcely get one under control until another appears. Drainage, irrigation, tillage methods, dry farming, seed selection, plant and animal breeding,—all these and a multitude of other questions require a knowledge of science which the farmer must understand if he achieve the greatest success.

There are a few principal agencies for the advancement of agriculture, through which the farmers of this country are assisted in overcoming their difficulties, in achieving the success to which they are entitled. Among these are the United States Department of Agriculture, the several state agricultural colleges, including the work of resident instruction, the agricultural experiment stations, and the extension service, the agricultural press, and agricultural fairs. There is time for brief reference only to some of the work of these agencies.

I have already mentioned the fact that the congressional appropriations to the United States Department of Agriculture for the present year aggregate more than thirty-seven million dollars; also that the agricultural colleges are receiving from all sources, some forty-two millions of dollars. These figures indicate the resources available for the work of these particular agencies. The following may be mentioned as indicating something of the value of experimental work in agriculture:

In the United States the value of poultry products amounts to about one-half billion dollars a year. The average production of eggs per hen is 80. At the Oregon State Agricultural College, Professor Dryden has been conducting a number of experiments during the past nine years, the pur-

pose of which was to increase egg production. Beginning one experiment in 1908, with a flock of 100 hens (Barred Plymouth Rocks), the result at the end of the second year was an average of 85 eggs; while five years later the average had increased to 176. During the same period another line of experiments was carried on by crosing White Leghorns with Plymouth Rocks. For the first year the average was 107. At the end of five years this had been increased to 223. The maximum record, as you may have noticed in the press, was 303. In an experiment which is now running at the Missouri Station, Professor Dryden has a hen which averaged 233 eggs for the year. Now what does this mean? Just this: That methods have been worked out by which the average egg production can be increased from 80 to at least 233. The farmers over the country, of course, because of unfavorable conditions obtaining on many of the farms, could not secure this maximum average. But assuming an average increase of 20 eggs per hen, or from 80 to 100 only, the result would be an increase in the value of the egg products of the United States, on the basis of present prices, of more than $125,000,000. The possible attainment of this result is apparent when we recall that the average would even then be 133 below the maximum average obtained in the Oregon experiments.

Again, there are in the United States, in round numbers, twenty-one million dairy cows. According to the report of the Division of Dairy Husbandry, United States Department of Agriculture, on an average, from year to year, taking the United States as a whole, approximately one-half of the dairy cows are maintained at a loss. The possibilities in this field are indicated by the fact that at one of the state experiment stations, beginning with a dairy herd of 17 cows, and an average yield for the first year of 233 pounds of butter fat, this average had been increased within three years to 344 pounds, or nearly 50 per cent. The highest record in the original herd was less than 500 pounds; while during the last year the highest record was but a little short of 800 pounds. Now, assuming an average increase of 100 pounds per cow, which, with ordinary care should be easily realized at 31 cents a pound for butter fat, or $30 per cow per year, the in-

crease would amount to more than $600,000,000. And most of this would be net profit, as there would be comparatively little increase in the cost of maintenance.

Similar results may be obtained in the field of horticulture. About ten years ago, an apple orchard of thirty-five acres was so badly infected with anthracnose that it was considered a failure and the owners had decided to take out the trees. The last crop of fruit was worthless. The horticultural specialists at the Agricultural College requested the opportunity of taking charge of the orchard and demonstrating what could be done. The owners finally consented, and under the control of these specialists the trees were cleaned up and the orchard so improved that during the first year the marketable fruit was sold for $6,000; during the third year, for $15,000. For the six years during which the orchard was under the direction of the experiment station, the aggregate receipts amounted to more than $46,000.

These figures not only show the necessity for improvement, but also indicate the real value of the work in scientific agriculture. In fact, the importance and value of experimental and investigational work, of the application of scientific principles in agricultural practice, are now generally recognized throughout the country. It is impossible, of course, to know or to express in figures the exact value of such work, but the information at hand would indicate that, in the aggregate, it must amount to millions of dollars annually.

The instructional work in residence at the agricultural colleges is likewise of the greatest importance, because it is here that leaders are trained, the specialists who are required in all the different lines of scientific agriculture. I have already indicated the rapid growth these institutions have made during recent years, the number of students in the regular courses in agriculture having increased to more than thirty thousand. These students are specializing along all lines of agriculture, not only in the main divisions, as agronomy, horticulture, animal husbandry, and the like, but in special subjects within these divisions, such as irrigation, drainage, dry farming, farm machinery or agricultural engineering, dairy production, dairy manufactures, beef cattle, horses, swine, poultry, pomology, olericulture, plant diseases, insect

pests, and so on. In fact, the development of agricultural science during the past two decades has been such that to achieve any degree of success, one must confine his specialization within a very narrow field. The demand for specialists in all these different lines is increasing year by year, not only in the research work of the experiment stations, but also in the instructional work at the agricultural colleges and in the different divisions of the extension service of these institutions. Many of the most progressive farmers also are now employing agricultural college graduates who have specialized in different lines of agriculture, such as horticulture, dairying, and the like, as managers or in other responsible positions.

Then there are the various extension agencies, by means of which the results of the work of the agricultural colleges, including the experiment stations, are being taken directly to the people on the farms. For many years the experiment stations were discovering the principles of science at the foundation of successful agricultural practice, but important as were their discoveries, they were of real value in the practical development of the agriculture of the country only to the extent that farmers were made to understand them and were able actually to apply them in their farm operations. Although bulletins had been published and distributed throughout the country, comparatively few farmers were able intelligently to interpret and use them and, as a matter of fact, most of them were generally of little practical value. Hence the organization of the agricultural extension work. This work has been so developed during recent years that it now comprises a large number of different agencies for agricultural instruction and demonstration in the field, such as itinerant schools, demonstration trains, educational exhibits, industrial club work, industrial school fairs, county agents or agriculturists. In the different divisions of this work attention is given to practically every phase of agricultural development, including field crops, farm management, horticulture, dairying, the live-stock industry, plant diseases, insect pests, rural organization and marketing, farm accounting and general business methods; and for women, different subjects of home economics. Through the extension service the re-

sults of the work of the agricultural colleges and experiment stations and of the United States Department of Agriculture are carried directly to the people, who are thus assisted by instruction and actual demonstration, in applying scientific principles and modern business methods in their work.

As already indicated, we are now expending in extension work in the United States, more than four million dollars a year. In 1915 there were 1,682 county agents in the different states. Without minimizing the value of the other forms of extension service, and with full appreciation of their relative importance, I am convinced that the work of greatest and most far-reaching practical value in the advancement of the agriculture of the country, is that being done by and through the county agents. These agents are selected with the greatest care and assigned to districts for the work in which they are best prepared. They are working directly with the people on the farms, under normal farm conditions, helping in the solution of the problems confronting the farmers in the regular routine of their work. It is this personal touch, with opportunity for co-operative effort, that makes it possible for these agents or demonstrators to follow progressive plans and get results that cannot be attained in any other way. These agents, of course, co-operate with the general field specialists working out from the agricultural colleges. They also receive assistance in the solution of special problems from the research men in the experiment stations. There are throughout the United States many hundreds of demonstration farms under the direction of the county agents. On these farms the most successful methods of agricultural practice are demonstrated, under average farm conditions. That the people generally are coming more and more to appreciate the value of such work is shown by the fact that the several states are appropriating larger and larger sums each year for its support. The Federal Government, also, is increasing its appropriations for this form of extension service.

The following indicates something of the extent and value of the work of county agents: In the Southern States alone, during the year 1915, demonstration work was carried on on 105,000 farms; instruction was given directly to 170,000 boys and girls; the county agriculturists supervized the construc-

tion of 3,000 silos; purchased for the farmers 13,000 pure-bred animals; vaccinated 108,000 hogs for cholera and 26,000 head of cattle for blackleg and anthrax; drained 65,000 acres; supervised demonstrations on 3,000 home gardens; organized 500 communities for co-operative purchasing and selling and for social, educational and general rural betterment. In the Northern States, likewise, there are hundreds of similar organizations. Thirty-five thousand demonstrations were conducted with crops and live stock; 300,000 hogs were vaccinated for cholera; personal visits were made to 76,000 farms; 72,000 farmers and their families attended different short courses or movable schools; and the extension workers addressed more than 1,200,000 people.

Another important agency in promoting the advancement of agriculture and the improvement generally of conditions in the open country is the rural school. During the year 1915 the number of pupils enrolled in the public schools of the United States aggregated more than twenty million. Of these about thirteen million, or 64 per cent. were in the rural schools. The number of teachers employed was 590,000; while the expenditures aggregated $550,000,000. In the urban schools there were 6,700,000 pupils, 175,000 teachers, 12,400 supervising officials. According to the most recent reports, more than one-third of the teachers in the rural schools are without professional training. Most, indeed practically all, of the rural schools, moreover, are without special supervisors. Furthermore, while only about one-third of the school enrollment is in the urban schools, these schools spend more than 60 per cent., or $350,000,000 of the total income.

It is a fact that until very recent years there has been practically no recognition given to the country boy and girl in shaping our educational policies. We are wont to boast of our American institutions, of our freedom, equality of opportunity; but, my friends, there has been no equality of opportunity in the educational work of this country. The public schools have been developed upon a plan which has served primarily the interests of the few who were preparing for the professions. As you know, more than 90 per cent. of the population of the United States is engaged in industrial occupations, and yet it has been only during the last two or

three decades that any recognition of this fact has been given in planning the work of our schools. But during recent years the consciousness of the people has been aroused upon this question, and today they are demanding democratization in education, equality of opportunity in school work. This means that the boys or girls in the country, as in the city shall have opportunity while in school for the training which will best prepare them for the vocations which they are to follow in life, whether in the mechanical industries, in business, in agriculture, or in the professions.

I have already said that the rural school is perhaps the greatest agency for the advancement of agriculture in this country. It is in the rural school that we reach the mass of children who are living in the country and who, if we have a permanent and prosperous agriculture, must establish homes and remain in the country.

Do you know that of the people who are operating the 6,500,000 farms in the United States, more than 33 per cent. are tenants? One of the greatest difficulties in the advancement of agriculture grows out of the fact that many of the most prosperous and, therefore, most successful farmers are leaving the farms for the city. We cannot develop the most wholesome country life and a permanent and successful agriculture under a tenantry system. You have heard the cry which has gone out all over the country, particularly during recent years, "back to the farm." But, ladies and gentlemen, we cannot build up a successful rural population by immigration from the cities. The thing most necessary, if we achieve the success for which we are striving, is that conditions be developed such that the people who are now in the country will be satisfied to "remain on the farm." This cannot be accomplished by any effort to induce city people, many of whom perhaps have retired from the farm, to go "back to the farm." You cannot, under present conditions, at least, take any considerable number of people from the congested centers of population in our large cities and establish them successfully on farms.

The results desired will be achieved only by creating conditions on the farm such that the ambitious boy and girl, born and raised on the farm, will be willing to remain there:

conditions such that it will not be the ambition of parents to gain a competency and move into the cities, in order that their sons and daughters may escape the drudgery, the hardships, that have heretofore characterized farm life. It is the ambition of every worthy parent in a country like ours that his children shall receive an education, that they shall be given the greatest possible opportunities for advancement. The great tendency from the country cityward may be attributed largely to the superior training afforded by the city. schools, and to other advantages of city life not found in the country. If the farm population may be induced to remain on the farm, the rural school must be improved. The thousands of immature, untrained teachers now in the rural schools must be replaced by professionally trained, thoroughly competent teachers,—teachers who not only have the scholastic and professional training required, but who, withal, have real interest in rural life,—teachers who will adapt their instruction to their environment, who will lead the children to an appreciation of the beauties and advantages of country life and inspire them with an ambition to remain in the country and take advantage of the opportunities there afforded for advancement.

We talk about the great tendency cityward in this country. But how could it be otherwise when most of the teachers in the rural schools are from the city, whose ideals are the ideals of the city, and whose chief subject of conversation with their pupils is on the advantages of city life? The influence of such teachers tends inevitably to arouse among the children an ambition to leave the country and go into the city. To obtain the results desired, all this must be changed. The work of the rural schools must be adapted to life-need. Provision must be made for instruction in agriculture, manual training, and domestic science and art, and the work generally put in harmony with country-life conditions. The rural schools, moreover, should be used as community centers for promoting the general welfare of the people. With the development of such schools, a much larger number of children in the open country will be satisfied to remain on the farm. And when the millions of children in the rural schools are given the advantages of training in agriculture, we shall have

taken a step far in advance in the development of the agriculture of the country.

Finally, if we are to succeed, agriculture must be more profitable for the farmer and more interesting to the farmer's children. To accomplish the desired results, agriculture must be redirected and placed upon a scientific basis. This involves the utilization of all the agencies for agricultural advancement. The United States Department of Agriculture, the several state experiment stations, the agricultural colleges, the rural public schools, and the other agencies to which reference has been made. Then there must be co-operation among all the people,—farmers, business men, bankers, manufacturers—hearty, sympathetic co-operation in the solution of the great problems encounterel in the development of the resources and industries and interest of the country. By the effective and complete utilization of all these forces there will be attained not only greater general economic efficiency, but also improved rural-life conditions and a consequent higher and better civilization.

CHAIRMAN GRISWOLD: Dr. Kerr has given us a grand address, but there is another treat for us, and I take great pleasure in introducing President R. A. Pearson, of the Iowa State College of Agriculture, who will address you on "The Agricultural Possibilities of Maryland."

THE AGRICULTURAL POSSIBILITIES OF MARYLAND.

BY DR. RAYMOND A. PEARSON,

President of Iowa State College.

Mr. Chairman, Ladies and Gentlemen:

Through the kindness of President Shoemaker it has been my privilege recently to make some observations of the agricultural situation in Maryland. I am invited tonight to tell you something of the agricultural possibilities of this state as I see them.

Let me say first, by way of warning, that I am something of an optimist. This disposition coupled with a subject that seems to have almost no limitation and under the influence of Maryland climate, and surroundings such as these, might

lead me too far—but if you will stay with me I will promise to bring you all home again!

When I think of the future of agriculture in this country a picture comes to me that I wish I could paint and exhibit where every person would see it. It is a composite picture. It represents different scenes on the farm and at different seasons. It is my ideal of agriculture. I do not know when it will be realized but I am sure it or its equivalent will become a reality *IF* the farmers and their true friends will give reasonable attention to the problems and the importance of agriculture. First of all in this picture I see live stock, fruit trees, and good crops in the fields. There are evidences of thrift and profit. Plenty of wholesome work out-of-doors and people willing to do it. The barns and their surroundings are well kept. The home is attractive, roomy and comfortable. The people, and the animals too, have the appearance of good health and happiness. There are labor-saving devices and comforts such as are familiar to all of us though we do not yet all enjoy them and there are others which are not yet developed but are on the way. For example, in the kitchen I see a small machine which is a mill for grinding flour. Under the kitchen table there are bins of wheat and corn raised on this farm and when flour is wanted the desired mixture of grain is poured into the machine and the button is turned and the flour comes forth. In the sewing-room I see a small machine and nearby a bale of pure white cotton or wool. By the adjustment of a few keys and with the aid of some home-made dyes and by turning the button, the housewife makes her own pattern of cloth—unlike all others. There is no stove nor furnace in this house. When heat is wanted the button is turned and the walls themselves radiate warmth. There are no lamps but when light is needed the button is turned and the ceilings are aglow. The people living here carry wireless telephones in their pockets and at any time or place they can engage in conversation with their friends at a distance.

A good road passes this farm and the products for the market are moved out easily and swiftly whenever desired. I think I can see a private aeroplane in the distance which

serves as the favorite family conveyance. Machines have been introduced to do much of the hard work and their aid is used in many places where man or woman or beast of burden now is employed.

The school and the church are important features of this picture and they are both appreciated by all the people and supported by them all. In the distance is the city, and people there are looking toward the farm instead of the opposite. In another direction is the agricultural college and experiment station. One important feature of the picture I have not mentioned. It is the windmill which has been trained to take energy from the wind and store it in such manner that it may be used for heat, power, and light. We know now that the energy is there, and more of it than we need. We are slowly learning to utilize it.

In this home and on this farm lessons of industry, purity, honor, loyalty, service, christianity, and good citizenship are taught.

Such is my ideal. I admit that in some respects it is a dream. But I believe in dreams, and so do you. Your imagination or your dream gives you an advance glimpse of what you would accomplish and with this as a guide you set forth to do something definite. The man who studies and works hard to develop a first class orchard has thought it all out in advance; and this careful thinking followed a dream, or an inspiration if you prefer to call it that.

And now as to the agricultural possibilities of Maryland. I would like to know what is your dream or your inspiration. Eventually I want to think that the average Maryland farm will be as good as I have pictured as my ideal. But let us consider what is possible in the near future and we will try to keep entirely within the lines that some would call practical.

As I look at this question, the future depends mainly upon three factors,—the efforts of individual farmers, the efforts of groups of farmers, and the attitude of the state.

There is no need of my telling you that you have in this state good soil and that you can raise good crops and that you have the world's best markets within a few hours of every

farm in the state—for you know these things even better than I know them. I am informed that your soil and climate are such that you can produce an unusually wide range of products. The exhibits in the adjoining room testify to this fact.

When I contemplate the varied and abundant resources of our states I wonder if we as a people appreciate what has been given to us, and what this wealth would mean to other human beings in other parts of the world if it and they had been placed together. There are thousands of acres in Maryland which upon chemical analysis would show from one thousand to two thousand dollars worth of plant food deposited in the upper eight inches of each acre. We ought to give thanks to Almighty God every day of our life that our lot has been cast in such a place as this.

But what are the agricultural possibilities in Maryland? I can hardly think of anything that is done in agriculture in any state that is not possible in Maryland—yes, more than that—and many of these things can be done more easily in Maryland than in the other states. What more would you have me say in reference to the natural conditions of this state? I repeat—that the future of agriculture in Maryland depends mainly upon three factors,—man-made factors—the efforts of the man himself, the efforts of men in groups, and the attitude of all men as shown by legislative action. The God-made factors are good enough. If Japan could get their equal she would pay enough to permit every man, woman, and child in Maryland to purchase anything within reason that they could desire.

Now what about these three factors that are to determine the possibilities of agriculture in Maryland:

I. First the man. Let us consider the average farmer. Doubtless he is not far different from the average farmer of other States. I sometimes wish the average farmer could be suddenly called up to give an account of his stewardship. So far as that is concerned the average man in any line of work might be benefited by an examination of this kind. I would like to ask him some questions and mark him on his answers. We would have a score-card for a man. We have

them for hogs and horses and corn and babies, why not for a man? There would be much in his answers to commend. I would examine him on each of these subjects and ask him to tell what progress he is making and I would give him more credit for progress than for achievement:

1. Conservation of fertility.
2. Thorough cultivation.
3. Drainage.
4. Growth of leguminous crops.
5. The use of cover crops.
6. The proper use of lime and commercial fertilizers.
7. Crop rotation.
8. Selection of seed.
9. Spraying for fungous and insect pests.
10. Disposal of poor cows.
11. Use of pure-bred sires.
12. Feeding economical rations.
13. Protection against bovine tuberculosis.
14. Production of clean milk.
15. Keeping of farm business accounts.
16. Use of mechanical power and machinery.
17. Employment of labor throughout the year.
18. Maintaining a reputation for honesty.
19. Providing for home comforts.
20. Reading reliable agricultural publications.
21. Membership in active agricultural organizations.
22. Attitude toward education.
23. Opinion of the importance and dignity of agriculture.

II. Groups. The future also depends upon the efforts of farmers in groups, organizations. Much could be said on this topic but perhaps it is less necessary here in Maryland than in other places. There should be social groups and business groups, and these latter do not mean the elimination of all business men but better dealing with them to mutual advantage. It goes without saying, also, that organization means the County Agent. These men, and the women agents too, are doing wonderful work. One county agent in Iowa in four years has the following to his credit:

Traveled 27,029 miles in automobile.

Traveled 12,192 miles in trains.

Visited 4,261 farms.

Received 3,892 visitors.

Answered 3,000 telephone calls.

Held 61 meetings (with 1,827 people) in oat smut campaign.

Given 18 spraying demonstrations.

Held 20 hog cholera meetings.

Held 27 township school meetings.

Made 215 visits to schools.

Held 8 colt shows.

Given 654 addresses.

Written 8,533 letters.

Sent out 76,124 circulars.

Written 1,188 items for local papers.

Described 86 farms in local papers.

Reports 550 alfalfa fields as compared with 12 four years ago.

Reports 225 silos as compared with 38 four years ago.

Reports 77% of seed oats treated for smut, as compared with 5% four years ago.

Has done much work through boys' and girls' clubs.

What a story of progress for any county!

III. The attitude of the state.—Perhaps this is the most important factor, because try as they will, men can not make effective progress with the state against them or out of sympathy with them. I welcome the intelligent interest in agriculture of the railroad president, the banker, and the business man. Sometimes they are charged with having selfish purposes. Sometimes they make mistakes. But I believe that as a class these men are actuated by honorable purposes. They want larger agricultural production but they want it profitable, too, for the farmer. They would be advocating a suicidal policy otherwise. They have noted the decrease of exports and the increase of population and now the importation of food products. And they want larger crops because this means more business for all business people.

Sometimes they have made the mistake of advocating state supported model farms throughout the state. This is an

error because we can always point to model farms run by model farmers.

And they are interested because they are coming to see more and more that the agricultural life is the best life. We used to advise boys away from the farm but now the reverse is true. The improvement of agriculture in these days is one of the seven wonders of the world, and if our business men could not see it we would be ashamed of them.

The newspapers are showing a favorable attitude. This is noticeable in city papers and country papers. They print more items of agricultural news. We want to see this increase.

The changing attitude of the public toward agriculture is shown again in connection with the awakening in reference to the natural resources of the country.

It is time for the public to become interested in such questions and at least be favorable toward their solution.

But the greatest natural resource is our soil fertility. It required millions of years to manufacture the surface layer of our soils. A goodly quantity of nitrogen, phosphoric acid, and potash has been deposited but we have disregarded all facts and in some places in our country in 150 years we have reduced the soil fertility to the point where it is hard to get a good crop. We have done worse than has been done in 2,000 years in parts of Europe. This is not a matter of concern for farmers so much as it is for the public. The farmer can move to better lands. He can feed himself.

President Van Hise says the problem of restoring our soils is the most fundamental, far-reaching, and most important of the problems of conservation which confronts the nation.

Has this problem entered Maryland? It has come to Iowa, and this year we will ask the state to provide $50,000 additional annually for a soil survey. No state is too poor for such work because it is fundamental.

Is the public of Maryland interested in these things? How much? I might mention other forces at work against the farmer—no, against the public—in the destruction of food and property. The insects and their depredations amount

in Maryland to perhaps $10,000 daily during the insect period of activity. Plant and animal diseases take their toll. Much of this loss can be prevented.

The day of reckless exploitation of our natural resources is fast coming to an end. This means that science must come more rapidly into our practice. It is for the state to make this possible, chiefly through its agricultural institutions, and for the people to make it a fact. The future of agriculture in Maryland as in other states depends upon this accomplishment.

The story of our disappearing natural resources is a sad story but we need not be discouraged if we will live up to our duty. There is no reason that I can see why Maryland, with her splendid natural conditions, her fine people, her nearby markets, and as promising a crop of future farmers and farmers' wives as can be found anywhere,—there is no reason why Maryland may not develop her investigational and educational facilities so as to lead many, if not all, other states in agricultural progress. Funds expended in this way will be returned many times to the wealth of the state, to say nothing of the development of character that will result, and the satisfaction that Maryland people will feel in looking upon their crops and animals with difficulties and pests kept down to the minimum, and the peace and comfort that will be yours in homes which are a little better than can be found in states that are less favored.

FRIDAY, NOVEMBER 17th, AT 8.30 P. M.

BOYS' AND GIRLS' CLUB NIGHT.

CHAIRMAN SAMUEL M. SHOEMAKER: Ladies and Gentlemen, I don't quite understand why the gentleman who will preside this evening needs an introduction unless it is for the benefit of some of these young people who do not know our Dr. Patterson, of the College. Doctor, will you take the chair? (Applause.)

REMARKS BY THE CHAIRMAN.

DR. H. J. PATTERSON, President Maryland State College.

Ladies and Gentlemen, Girls and Boys:-

This night has been set aside for the Canning Club Girls and the Corn Club Boys, and we have with us a number of people who have done much in promoting your work to talk to you, but I cannot refrain from saying a word to you even though I was admonished to say nothing.

You have just returned from the "Home State Tour." You have had an exceptional opportunity to see your State from one end to the other and also to see many of your public institutions. I hope you have been impressed by the worth of your State and the opportunities which it presents. For fear that you might get a wrong impression or draw unwarranted conclusions, I want to remind you that the real worth or advantages of the City can not be measured by the brilliancy of the lights on the streets and in the shops; again, you must not judge the Country by the discomfort and gloom that comes with the damp biting winds and dreary days of February and March. Both city and country have some disadvantages mixed with their advantages. Your chances of success are as great in the country as in the city. Few if any succeed in either when they limit their labors to eight (8) hours per day. The city man averages more hours per day than the man on the farm. The city man usually has less leisure and independence than the man on the farm.

You have one fact demonstrated forcibly and that is the value of special training for the work you are going to take up. You have succeeded in growing better crops of corn than your fathers and your competitors because of special preparation and training.

The same will be true of the bigger things which you shall be called upon to do in your life's work. Therefore I would advise you all to select carefully the vocation you want to follow and then go, if possible, to College and get special training for that work. By that means you will get pleasure out of your work and know what real pleasure is and have

success to reward your labors. I hope most of you will decide to follow Agriculture. It offers just as good opportunity for greatness, wealth and happiness as any other field. Only a few of the people who leave the farms become captains of industry.

The farm boys and girls of this generation have many advantages not enjoyed by your parents and the recent Rural Credit Bank Act will assist you in financing projects that could not be availed of by former generations.

Let us hope that these seventy-five (75) prize winners from the Girls' and Boys' Clubs will be big factors in developing the Agriculture of Maryland.

We have a number of speakers with us tonight and some of them are not on the printed programme. The first one whom I want to call on is here more by chance than anything else, and he is a man who has been all over Maryland in addressing meetings of the Maryland Grange, he has been all over these United States and he knows something of the products that are raised in the different parts of the United States. I take pleasure in presenting to you this evening Mr. Oliver Wilson, of Peoria, Illinois, the Master of the National Grange. (Applause.)

ADDRESS.

By Oliver Wilson, Master National Grange.

I must be very free and fair and truthful. I don't know what to say. I came over here from Washington to see the beautiful fruits and the beautiful flowers. My good friend Dr. Patterson said if I would come I would have nothing to do. Now it was only a mistaken term. I supposed the fruits and the flowers would all be out there, but I understand now that Brother Patterson had a higher meaning, as he has assured me since that the "flowers of Maryland" are right here before me. So, boys and girls, I am not going to talk to you but a little while because I once made a solemn vow, when I was a schoolboy about the size of this smaller boy on the front seat. At that time, out in the country districts, the County Superintendent used to come to visit us,

I remember him very well, and, as I recall his speech, it was his graduating speech of about forty years before. The school teacher showed us off in good shape. Of course, we all had to go through the extras,—you boys and girls know what the teachers put us through when we have visitors,—and at about four o'clock my good friend, the superintendent, would get up to deliver his speech, there was only one end to it, and that was a long ways off. I remember then vowing most solemnly that I never would be guilty of trying to make a public address, but, somehow or other, I have forgotten that, but one thing, boys and girls,—out of that promise I have remembered one thing, and that is not to talk the boys and girls to death.

I am very much pleased to see this gathering of Maryland boys and girls, and I agree most fully with what Dr. Patterson said, and I have come to this conclusion after long years of experience, after, as he says, having traveled not only over your beautiful Maryland, but practically over the United States, not only in the country districts, but having been in almost all the large cities in the United States, I believe I have had a little experience and know conditions.

I know sometimes that boys and girls on the farm think we have to work pretty hard. I know sometimes that we think the boys and girls of the town have a little easier time, that the young man and the young woman of the town don't have to work so hard, and get along a little easier than we do. But you have only seen one side. I heard a lecture not long ago from a man who should have known better, and what do you think he talked about? He talked about the monotony of farm life! The monotony of farm life in this day of the telephone, in this day of the automobile, and in this day of all the good things! Monotony! There is no monotony, boys, on the farm. There is only one thing, girls, that is monotonous in the household, and that is that eternal washing of dishes a thousand times a year. If there is a girl here that really loves to wash dishes better than go to an Easter party I wish she would hold up her hand. Now, then, if some of these boys don't, within the next few years, invent a practical dish washing machine for the home and the

household,—there are lots of them now, but none of them really practical,—boys, you aren't doing your duty. Monotony! Look at the young man and the young woman in the city. Is it monotonous? I see each morning, in the city, and you see each morning not only in Baltimore but in every other city, young men and young women, often old men and old women, at a certain hour, at a certain minute, start on the hop, skip and jump, for a street car. They go to a great establishment, and they punch the time they get there in a big clock, and they work until just twelve o'clock, and then they punch that same board when they go out at twelve o'clock, then they come back again and do the same thing at one. This is carried on not only once, but three hundred and some odd days in the year. Do you see any monotony about that? It isn't so on the farm, good boys and girls. There is a variety. I heard a minister say the other day: He didn't know what farmers had to think about,—that it would be so lonely. I said to him: "My good friend, a close observer of the farm," such boys and girls as we see here, "never turn a furrow, never plow a row of corn, but what, if they are close observers, see something new,—a new insect, a new plant, a new bird, or something else new that they desire to study, and they understand plant growth." Why, good people, I am convinced that no man or woman, and I am going to make this a broad assertion, that no man or woman can ever attain to the highest mental or moral attainments unless at some time they have been in close touch with the soil.

You have a great State in little Maryland. I think a good deal of little Maryland. I think it is quite a big Maryland, I cannot see but what the advantages are just as good here as they are in other localities. True it is, probably, we who are used to work out on the prairies of the West may feel somewhat cramped, but the great question is to understand your work—understand most thoroughly—in the household and on the farm. This is the great success in life, and I am more than pleased to know that the colleges and the high schools of today, are beginning

to give a practical education, and they are teaching the boys and girls that an education is something that they should use every day, and they have begun to realize that the boys and girls had better study a little more about the milky way of the Jersey cow than of the Milky Way that spans the heavens. So it is all along this line of work, and to you boys and girls who live on the farm, as Dr. Patterson has said, so I would say,—"stay on the farm." It is true that many of you will have to occupy other positions. If it were not for the boys and girls from the farm, we do not know but our cities would go into decay, because statistics tell us that the great centers of trade are built up about every third generation from the boys and girls of the farm, but those of you boys who love the farm, and love the stock, and the grain, and the fruit, and the flowers, I am satisfied that today there is a better opening for the young man and the young woman than in almost any other avocation. The fact is, today the world is filled with great institutions, and there is very little room for a mechanic of smaller means and development. Why, there is very little development in the factory. I know of men who stand day after day in a great shoe factory, and all they do is to put on a little leather heel tap, and the machine does all the work. Do you think there is anything to enlarge the intellect or the thought? But on the farm there is a new job every day.

I am going to let you boys and girls know I am truthful, and I am going to quit right here, and I hope that we will see and hear of these boys' and girls' clubs going out into Maryland and teaching these men even, like Dr. Patterson here, how to farm; brother Knapp and all these men that think they know how. Why, they don't know all about it. There is a whole lot that you boys and girls must learn before you will be fully a success. But keep on in the good work. If you take to the farm, always be ready and proud to say that "I am a farmer," that "I am one of that great host of people who are today feeding the world." Other things you must take up; there are many things that should come about on the farm that will be left for you boys and girls. I know, good people, there is a good deal of talk

about "coming back to the land." Now I haven't very much interest in that. I would rather the boys, and the men and women, in the city stay there, but when I look at these classes of boys and girls I would rather they be out on the farm to raise the product and ship in to the town. We need them there, we need them in our business, but let us understand that we must make farming so profitable, and our schools so good and effective, that we will have the same advantages there as we would if we lived in the city. (Applause.)

DR. H. J. PATTERSON: I now take pleasure in presenting a man whom every farmer, I believe, already knows by name, and I know that every corn boy and every canning club girl knows by name. He is a man who is following in the footsteps of his father, and a man who has done an immense work for the upbuilding of the agriculture of the United States. I take pleasure in presenting to you Dr. Knapp, leader in the demonstration work of the United States Department of Agriculture. Dr. Knapp.

ADDRESS.

By BRADFORD KNAPP, States Relations Service,
United States Department of Agriculture.

Dr. Patterson, Young Ladies and Young Gentlemen, and Friends:

You know, it is a great thing to be a boy or a girl and live in the country. It is a great thing to be attached to a State, and a great thing to be attached to a great nation, and to know that you are a part of a county, a part of a state, and a part of a nation. It has seemed to me, as I received the invitation to come over here tonight, that it was a great conception, whoever thought of it, to take these boys and girls from the various counties of Maryland and take them about over the State. Most of us in this country are entirely too provincial; we don't know enough about our neighbors; we don't even know enough about our State; and, Heaven knows, we don't know enough about our country! So that it seemed to me that it was a great educational work for those people

who have been interested in your tour to take you all over the State of Maryland, so that you might know it, from the level plains of the Eastern Shore away to those beautiful mountains in the west, and then to see what your State has done for you,—put these magnificent highways from county seat to county seat and made this the banner State, really, in its highway system; furnished a first-class means of transportation; and to really appreciate that you, as you come back to your own communities, are a part of this great State, and that it was for you to come back there and to do something that would make life, the State of Maryland, and its good name, a joy forever.

You know, sometimes in this country I feel that we educate to get away from the things that we belonged to before, and that the boy or girl who comes from the farms of the country to the college, or to town, and goes to school, too often is weaned away from the home neighborhood and never goes back to become a part of the life of that community. It reminds me of a little incident told to me by Minister Eagan, who is our minister from this country to Denmark, when I was in that country some three years or more ago. He said that in a certain part of Denmark there was a farm boy, and the farm boy grew up there in this community—and in that country everyone has their task in the community. Everyone is a farmer, it is true, but each has their task outside of farming. One makes the shoes for the community; another is a blacksmith; another the carpenter; another lays the thatched roofs of the houses, and each is skilled at some trade. And this boy became apprenticed to the blacksmith. He went to the rural school, and he was bright, learned rapidly, and after a while he thought that he ought to go away and learn to be a better blacksmith than anyone else. He borrowed the money from the people—really from what we would call, in this country, the county government—borrowed the money to go to the city of Copenhagen to study to become a blacksmith. And thus he became a fine manipulator of steel and iron, and a splendid blacksmith. Now, do you know what would happen, nine times out of ten, to the boy or anyone else in this

country who went away and learned to be a fine blacksmith? He would have gone to some great city where he could make money out of that profession. But what did the Danish boy do? He thought that those people back in that farm community had stood behind him, and loaned him the money to go to school to become a fine blacksmith, and that he owed it to that community to go back and not only become a fine blacksmith and a leader in his line of work, but to make that community a better place because he was a better workman, a better handicraftsman in the community. I have remembered that story ever since, and I have wondered to myself whether you boys and girls are to be inspired by this work that you have done.

If you go to the Maryland State College of Agriculture, or some other institution, and acquire knowledge and skill in mind and hand and body, then will you go back to the community from which you came and take up the problems which await you there! Is that what you are going to do, or is education going to take you, and your power of thought, and influence, out of the country! If it is, sometimes it seems to me it would be almost a mistake. One day I heard a story of an old negro. A man asked him what it was that made the difference between a good farmer and poor farmer, why it was that some farmers were good, even amongst his own people, and some farmers were poor farmers. The old negro scratched his head and said: "Well, I reckon it's just dis way; some of em sits down and thinks, and some of 'em just sits down." (Laughter.) Now are you going to sit down and think, or are you just going to "just sit down!" That is the question, and really that is going to be the thing, the one thing, that will mark the difference between you as successful or unsuccessful citizens of this State, and some day we will call both sides of this aisle citizens of this State. (Pointing to the aisle between boys and girls.) (Applause.) That is going to be the mark of the good citizen. The one who stands as the leader of the community is going to be determined by that one thing, as to whether he is trained to think or not.

Your work, as you have been here together in contesting for these prizes this year, has been a training to you. It is the kind of training, as Dr. Patterson has well said, which will carry you on through life. In the first place you had a task to perform. Before you began upon that task you had the best information that could be brought to you about how to grow corn, and how to raise tomatoes, and how to gather them, and then you applied the scientific knowledge you had attained from those sources to the task you had. You learned that you must apply yourself persistently to that task, and that, by applying this scientific knowledge persistently to the task, you won the prize. It was the degree of intelligence with which you could acquire the information and apply it to the work that made you the winner and not someone else. The very same quality will carry you to success in life.

Now, I want to leave with you just one other thought, and that is that you have had a training of a very rare sort, which it seems to me will be of superlative interest and importance to you in the future years. And that is, you have learned what it means to be associated together in clubs. You may not understand just how important that is, but the young people of today are to be the farmers and the farm women of tomorrow, and I am glad tonight that we have the representative of one of the great farmers' organizations of this country upon this platform, because it is, after all, the cooperation of the farmers of a community which will make the community great.

I was talking to a county agent in a distant state one day, and I happened to know two sections of his county, and I said to him: "Do you know the people of Hickory Grove?" He said: "Yes." I said: "Can you buy farms there?" "No," he said, "none for sale." "Is the land good?" I asked. He said: "It's as fine as any in the State." I said: "Are the people there happy?" "Happiest people anywhere in the world," he replied. "Well," I said, "why can't you buy land there?" He said: "Nobody wants to leave; they are all happy and contented." And then I said: "How about the land down at Woodstock?" "Just as good land as the other." "Can you buy any of it?" "Buy almost any farm

you want," he said. "Why is that?" I said. "Did you ever think why?" "Well," he said, "I don't know, unless it is just the difference in the people." I said to him: "Don't you remember that at Hickory Grove they have had a community organization of the farmers for twenty years, and at Woodstock every farmer's hand is set against his neighbor." And that is the secret of the whole thing. Show me a community with organization in it, with something which expresses the life of the community itself, and I will show you a body of farmers who are contented and happy, and trying to solve their own problems, taking the intelligence of the whole community and applying it to these problems. Show me a community without organization and I will show you, nine times out of ten, people who are dissatisfied with life, and it is just because they haven't put their intelligence together in one of these organizations. You learn that it takes team work. Why, I would have thought tonight that you boys and girls had been going to college for at least four years, the way you have learned to yell together. Now, if you hadn't been trained and hadn't had the spirit of cooperation, you couldn't have given those splendid yells that you did give, you couldn't do it to save your lives unless you had leadership and cooperation, and leadership and cooperation are the vital parts of the life of every community.

You know that Dr. Patterson talked about the Federal Farm Loan Act. That act demands that there shall be organization in the community, and I believe it will be one of the most potent forces this country has ever seen to draw the farmers of this country together in community organizations, through which they will learn the secrets of cooperation. I remember that once I was traveling away down in Texas and wanted to find a certain farmer whom we will call Brown. I saw an old negro on the way and I said to him: "Uncle, does Mr. Brown live in this community?" He said: "W'at's dat, boss?" I said: "Does Mr. Brown live in this community?" He said: "Well, sir, ah knows Mr. Brown, but what's dat las' word you said?" I said: "Community; don't you understand what that means? A community is a district in the country where people have interests in common." "Oh,

no, boss,'' he said, ''this ain't no community, this here's jes' a place.'' (Laughter.) Boys and girls, is the country that you come from a ''community'' or is it just a ''place.'' Is it a community or is it just a place? Is it a place where people have interests in common and are putting individual intelligence together in the solutions of the common problems of life upon the farm, where there is expression to life, where people get together to have a good time, where they have estimated life for what it is worth, and are working the interest of a full life in that community, or is it just a place where every man's hand is set against his neighbor? You have learned, in your club life, something along that line, and I hope that the training you have had along that line will stay with you and that, as you grow up, you will put forth your effort to be leaders in the community and to draw people together to work in the cooperative lines of endeavor in each community. Why, communities can do a great deal for themselves if they just will. They can get together to sell the products of the farm. It takes community effort to build roads, to put in telephones, to have schoolhouses, to have churches, to have good farms, to swap work, to buy machinery cooperatively, to own stock and to standardize its production for marketing. It takes effort of this sort along all lines, and it seems to me one of the most valuable things that you have done is to know how to gather together in common action instead of acting as individuals.

Now, I have declared that I would not talk any longer than our distinguished friend, the Master of the Grange, and so I have come to the time when I must stop what I have had to say. The other morning I got up early at my house away out on the edge of Washington, and, just as I was putting on my coat to go and do the chores before time to go to the office, I saw my little girl of ten years of age on the floor in the library, painting with little paints and a brush, on a piece of cardboard, and I said to her: ''Daughter, what are you doing?'' She looked up and said: ''papa, I am making a sign.'' ''What for?'' I said. ''Well,'' she said, ''papa, you know we have a little sewing club amongst the girls in this neighborhood, and I am painting

a sign for our sewing club." "Well," I said, "what do you want with a sign for a sewing club?" "Well," she said, "we had a meeting today, and I didn't like the meeting; they talked a great deal and didn't do much of anything else." "Let me see that sign," I said. And what do you suppose she had painted? It read: "Talk less and work more." (Laughter and applause.) My friends, we will never get these things by just talking about them. Someone must go out and do the work, and it is up to you. I can only talk to you about it and then do some work in the community where I happen to live, and the rest remains in your hands.

I want to congratulate you on your great success, on your opportunity; congratulate you upon being citizens of this State, and congratulate you upon the opportunity that you have to serve it in the future. (Applause.)

CHAIRMAN H. J. PATTERSON: I think the people gathered here tonight would miss an opportunity if they didn't have a chance to, at least, meet in a general way the man who conceived the idea of the Home State Tour. Therefore, I am going to ask Mr. Warner to say a few words to us. (Applause.)

REMARKS.

HENRY EDWARD WARNER, Baltimore.

Mr. Chairman and Boys and Girls:

(Applause.) Well, if I were not hoarse, I would give a little yell myself, because I know who is all right,—these boys and girls,—and they know I am not going to stand up here and say much more because two of them are sound asleep, and the rest of them have been asking what kind of a show it is in the other room, and it strikes me they ought to get a chance to see that show, if possible. The best speeches I ever heard were by two good speakers. One said: "I have nothing to say," and sat down. The other man said: "I move that we adjourn." I don't see that there is anything that can be said beyond that by me, because you have been sermonized and lectured, and I have roasted some of these boys over there; we have talked from Crisfield to Baltimore,

and I am sure that Brigham and his crew talked from Oakland all the way in. That was a splendid speech we had yesterday, too, from the President of the United States. His Secretary talked to us over the 'phone and said the President would not be there. (Laughter.) We saw the Secretary of Agriculture, too. He was out of town, (laughter), so we talked with Mr. Vrooman, and Mr. Vrooman made a splendid talk—a very progressive talk. He kept pushing us around out of the room all the time we were there. (Laughter.) But it was all right, because we had a special car, and were all dressed up, and had some place to go, and we got back here today, and I know that you wish you hadn't gone on this trip. ("No! No!") I know you are tired out (some one says "there's nothing to that") and I know you are wondering whether you will have a Home State Tour next year, but that depends on the State of Maryland, the Agricultural Extension Service, perhaps the United States government, and the good friends of the State of Maryland who made this one possible. (Applause.)

CHAIRMAN SAMUEL M. SHOEMAKER: Now it gives us a great deal of pleasure to introduce to you Mr. Martin, who is the Specialist in Charge of the Boys' Club Work in the Department. (Applause.)

ADDRESS.

MR. O. P. MARTIN, States Relations Service, U. S. Dept. Agr.

Mr. Chairman, Ladies and Gentlemen:

I looked over on this side a moment ago, and I saw one of these boys with heavy eyelids, and he tried to hold his eyes open every possible way he could think of. Now I sympathize with that boy. I think he is very much in the position of the young boy in church, where the preacher was accustomed to preach very long sermons. That boy was enjoying a comfortable nap and at about the close of the first hour of the preacher's sermon the preacher warmed up, stamped on the rostrum, and aroused the boy. He sat up, rubbed his eyes, and said: "Is this this Sunday night or next Sunday night?" (Laughter.) Now you have a right to be just as tired as that boy was.

Now Mr. Hill, of our office, is going to speak a few words to the boys, and I am going to speak for the girls. There are sixty-thousand of these white caps and aprons between here and the Rio Grande river. Now, when I was a boy, there was an organization in our part of the country called the K. K. K., or Ku Kluxes, and they had a white garment of some kind. I got the impression at that time that those men were fighting to save their civilization. It dawns upon me with great force that our civilization is at stake and that these 60,000 girls in the Southern States are doing, and are going to do, their part to advance the civilization of the South. They are working in a more effective way than did the organization to which I have referred, and with greater success. In cooperation with the work the boys are doing, they have done and will continue to do great things. The father of the gentleman who spoke to you a few moments ago from the Department, first made a most significant remark, in speaking to an association in my State. In the year 1907, before the boys' work had got more than fairly started and before the girls' club work was organized he was looking forward to what you girls are doing. It was in the closing years of his life that he had a hand in establishing the work you are doing. But here is his remark, that I want you to remember. He said: "The country home, be it ever so plain, if it have a father and mother of sense and gentle culture, is nature's university and is better endowed for the training of youth than Yale or Harvard." Now that is the home from which you come. That is the home where you are doing this great work, and I want your good friends here to remember that the work that you are doing is profitable and that it is valuable. Those are the two next points that I want to make. Now during the last two weeks I have met several groups of girls like this, and I have had County Agents introduce girls to me and say "This girl made $96.35 on her work this year," and this girl made so much, and this girl so much, up to as high as $120 in some cases. I think it is a reasonable estimate to make,—that in three or four years, with that sort of energy and with that sort of thrift, a girl might put two hundred dollars in the bank. When I was a

boy one of those humble philosophers that you find in every community, a man sixty-five years of age, told me that one dollar at my age, when I was fourteen or fifteen, was worth fifty dollars to a man of his age. He said that I would do better to save one dollar and invest it, and, if I were a man of ten talents, if I would turn that dollar over, it would be worth more to me, with the life I had a right to expect before me, than fifty dollars at his age. Well that thing didn't dawn on me for several years, and yet, you take a fourteen year old girl, who started at ten and spent in this work four years,—suppose she puts two hundred dollars in the bank. Money will double itself in twelve years, double itself in some parts of the country where interest rates are high. Well, thrifty boys or girls certainly ought to be able, with their heads, to double it in half that time. If we double it every six years, and that is within the range of probability, that $200 will be $400 at the end of the first period, $800 at the end of the next period, $1,600 at the next, $3,200 at the next, $6,400 at the next, $12,800 at the next. Add thirty-six years to your age now, and it will make you about fifty. If you didn't make any more money than that, but just devoted the rest of your life to handling that nest-egg, you would be worth $12,800! But think what you would have acquired in the way of a habit in that time. Now I believe this work is worth while from a financial standpoint, and I don't hesitate to say: "Earn something, own something, have a bank account, and learn how to take care of it." This work has been made profitable from a financial point of view.

From the standpoint of usefulness,—it would be impossible in an hour and a half or two hours for me to trace the results of the object lessons that have already been furnished by the girls in these clubs. One of the girls in my own State who was present at the first canning demonstrations we had there furnishes a good example of progress. At that particular time we were trying to get the work started. We spent a whole week in that county. She was there every day. She had the best tomatoes and peaches of anybody who came there, but she was awkward, timid, and bashful, and all that sort of thing. There were only three agents in that State

the next year, and three in the adjoining State, and we met at a place on the line and found there were some peaches in her county. We were fourteen miles from her home, but she came there, and she showed more skill, more ease in the operation that was being conducted there than any of those agents. Some of them were just starting in the work, but it impressed me more than anything else, that the ability to do something well, to do a definite job and do it well, has a reflex action on the mind, and on the hand, and on the body. I have taught girls in high schools, and I have watched them from September to June trying to see how much they would grow and develop in that time, and I have never seen a girl, in a whole session, who made more progress in real culture than that girl made in that short time. The Legislature gave her a scholarship and she is now finishing college with the ambition to help other girls in the same line of endeavor.

And I want to tell these boys about one Georgia boy. Our Agent and the County Superintendent of Education appointed a meeting at the courthouse in one of the counties down there in Georgia. A number of boys came and organized a club, but after it was all over the managers sat down and talked about one boy who was absent. That boy lived ten miles south of the courthouse. And bright and early the next Monday morning the County Superintendent went down to see him. After he drove up and the father and the boy came out and helped him unhitch his horse, the boy went with the County Superintendent to the barn to put up the horse, and, as they went on down to the barn, the Superintendent said: "Charlie, we missed you Saturday." He said: "Yes, sir, I wasn't there." "Well, why didn't you come?" "No use," Charlie said, "for me to come; I don't propose to join the club." The Superintendent asked him: "Why is that, Charlie?" "Well," said Charlie, "there's no use; I don't propose to be a farmer." "Well, what are you going to do?" the Superintendent asked him. Now, mind you, that was the only child in that family, and that father had four or five hundred acres of good land. That boy, with rich, red blood in his veins, reached his hand in his pocket

and pulled out a dirty, greasy advertisement from one of the Atlanta papers which said: "Automobile College. Boys graduated in three weeks." And he said: "I'm going to college!" Now there was a boy, with that sort of atmosphere, with that sort of surroundings, who had deliberately formed a purpose to go to the city, to leave the advantages that he had at home, to go to the city and spend the balance of his life driving automobiles, hauling people around for twenty-five cents a head, or being "a chauffeur or a lackey for some nabob of high finance. (Laughter.) Now what an ambition for a country boy! Aren't you sorry for him? Why, you and I know that if that boy, at that age of life, before his character was formed, had gone to the city of Atlanta, that he would most likely have gone to temptation, to degradation, to ruin, and to death. That situation brought out the best there was in that County Superintendent, and he plead with that boy, got on the right side of him, and reasoned with him. The boy had enough sense and reasoning power to face the truth when he saw it, and finally he became a member of that club, and stood second in it. I have watched that boy year after year. He took a course in agriculture at the State Agricultural College later, and I thank God that he became ambitious to go back to that farm and make a better success out of it than his father had ever done. He is now doing that thing, and Georgia may some day call on him to be Governor, or may summons him to come to Congress. We will let that part take care of itself, but you and I know that if Georgia calls for him he will be ready, and I believe that Georgia will call for him.

This work of these boys and girls is cooperative. They are pulling together, as some of the speakers have already intimated. These boys are an inspiration to the farmers, and these girls have already caused us all to talk about this work being useful and valuable. These girls have already led 30,000 women to take up some work,—thirty thousand,—and they are just carrying forward the lines of work suggested by the girls. There is a great deal in the art of suggestion, and there have been thousands of minds concentrating on the home, and on home devices and conveniences. I think it

is worth a great deal, if these girls don't do anything else, to cause strong inventive minds to study the question of improving the home, and getting labor-saving and time-saving devices and conveniences. One of the County Agents in your neighboring State of Virginia made a statement in her report at the close of the week that I think is the best definition ever made as to what this club means. She was preparing her field report to send in to the College, and a copy came to the Department of Agriculture. Here is her estimate of the work you girls and boys are doing; "After all, this club work means to get a girl to do something worth while, have it approved by those she loves, and then lead on to greater things." Now that is the law and the prophets, and that is what you have done, and that is what you will do. I thank you. (Applause.)

ADDRESS.

By I. W. HILL, States Relations Service, U. S. Dept. Agri.

Mr. Chairman, Young Ladies and Young Gentlemen, and Ladies and Gentlemen:

I have the biggest family of any man in this country. I have 70,000 boys. (Laughter). These assembled here are only a small part of them. Before I begin my talk, permit me to say that I suspect that you gentlemen, and you ladies, and you boys, and you girls, are in the condition of the old teacher down in my State in days long gone by. In those days they boarded the teacher around among the scholars as part pay for teaching the school. It was the spring of the year, and at that time down there, instead of turning the humus into the ground—the vegetable matter, boys—they burned it off. I hope you don't do that in Maryland. On every desirable corner a boy could be seen with a single-barreled shot gun. He would shoot the rabbits as they ran from the burning sedge. At such times rabbit was plentiful on every table in the community. In the beginning the teacher enjoyed the rabbit he got at the different homes, but after he had eaten rabbit for several days he began to get pretty tired of it, for they gave him rabbit for breakfast, rabbit for dinner, rabbit

for supper. After eating rabbit three times a day for a whole week, on going to another home he found that they too had rabbit, and when they called on him to ask the blessing he delivered himself somewhat after this manner:

"O, Lord, we have had rabbit young and rabbit old,
Rabbit hot, and rabbit cold,
Rabbit tender, and rabbit tough,
Thank the Lord, we've had rabbit enough."

(Laughter and applause.) This is the condition I think you are in tonight. Apparently, every phase of the subject has been covered, but I want to say that very little has been said about the beautiful spirit of cooperation that is manifested on the back of that circular. There are four different societies, each one separate and distinct, and that beautiful show that you have out there is the result of the hearty cooperation among these four separate and distinct societies. This, boys, shows you what can be done by cooperation, to which the head of our office has so well referred.

I want to congratulate the people of Maryland on putting on a show that is educative. I have been all over the Southern States this fall, have attended more fairs and exhibits than, possibly, any man in this audience, and at every one of them excepting this one, the side show has been one of the biggest features, the quasi-gambling establishments are there, but here you bring forward only those things that have a tendency to improve and educate the boys and girls of the State of Maryland, and again I congratulate you.

And I want to congratulate Mr. Warner, of the Baltimore Sun, or whoever it may be that organized the Home State Tour. He has done a great educational work, because you older people know, if you will think back to your schoolroom days, that your teachers taught you more about things away from home than they did about the things that proved of greatest value to you after you left school. You ought to learn first, boys and girls, of the things that happen in Maryland. It doesn't matter whether you ever learn where Timbuctoo is or not. But learn about Maryland's crops, Maryland's soils, Maryland's live stock, and Maryland's boys and girls—but I need not tell you to learn about the girls, be-

cause you boys are bound to learn about these "flowers" whom Mr. Wilson told you about.

Now I want to congratulate Maryland on another thing. A few days ago some of you had a banquet here. I read an account of it in the Baltimore Sun. A toast was drunk to a man who had crossed over to his reward, because he did something that still lives in Maryland. Governor Crothers (applause)—it was during his administration that this great system of highways was started in Maryland. Today, while enjoying the rewards of the blest, he is remembered with affection in the State over which he ruled, on that account if for nothing else. The present administration, if I read the signs of the times aright, in the future will also be remembered. I have been informed that as a result of its efforts money was appropriated at the last session of the legislature so that the Maryland State College might be placed on a basis where captains of industry and teachers might be trained. The administration did not stop there. If I have been correctly informed, this same administration provided a thousand dollars for each of the twenty-three counties of Maryland to carry the information that had been worked out at the State College, and from other colleges, and the Department of Agriculture at Washington, back to you boys and girls, and the farmers. Don't you see what that means to Maryland? It means scientific knowledge worked out. It means scientific knowledge simplified so it reaches these boys and these girls. It means the information carried to you at your homes, and that you haven't to go even to the College to get. It calls for a qualified county agent in every county in Maryland. It will wake up the old farmer who is dead and doesn't know it. Many of the farmers of this country are in that fix now. My friend Barton tells this story to illustrate the non-progressive farmer: A South Carolina farmer had a little boy for whom he always bought candy every time he went to town. This little fellow, when the father returned home, would ransack his pockets to get the candy. The farmer started to town one morning, and his wife requested him to buy her some assafetida. Well, he bought it. Did you ever smell any? As he was going home that assafetida got wet.

Boys, did you ever smell any wet assafetida? And when he got home he got in front of the fire to dry, and the little boy got around him and felt in his pockets. After awhile he got around to the pocket with the assafetida in it, and after he had put his hand into the pocket and taken it out he ran to his mother and said: "Ma, my pa's dead and he don't know it." (Laughter and applause.) Now, ladies and gentlemen, I hope you haven't got any of that kind of farmers in Maryland, and if we can get this institution at College Park working out the scientific knowledge, and well qualified county agents for both boys and girls in every county, "Back to the farm" will be a thing of the past, and the time will come when it matters not under what sun you may be, you will be proud to say "Maryland, My Maryland." (Applause.)

REMARKS.

DR. A. F. WOODS, Dean and Director,
University of Minnesota.

Mr. Chairman, Members of the Board, Boys and Girls:

It is certainly a pleasure to get back here to old Maryland. I lived on the edge of your wonderful State in the District of Columbia for sixteen years and grew to love Maryland as much as you do. Every now and then in my home I play "Maryland" on my playing machine, and it takes us all back.

I bring you greeting from 5,000 of your fellow students in the Department of Agriculture of the University of Minnesota, gathered there to study the most wonderful science, the most wonderful "culture," that has ever been studied in the history of the world,—agriculture,—a science, a life, a business, that has more in it than any other study that the human mind has ever undertaken. I haven't time to develop that thought tonight, but those who have even scratched beneath the surface of this wonderful subject realize what it is. Did you ever think that those who are combining the soil and the sunshine, and the labor of their hands and minds, into the agricultural products that go into the markets of the world constituting eighty per cent of commerce and manufactures—did you ever stop to think that these boys and the girls are working with the great infinite powers of the universe in do-

ing that? Did you ever study what a wonderful thing sunshine itself is, what a wonderful thing the soil is, what a wonderful thing a plant is, and what a wonderful thing the human spirit is, that takes all of those things and combines them and makes out of them all these wonderful, most beautiful and artistic things that you have on exhibit here today? No Michael Angelo, no artist, no great spirit that has ever worked in the universe anywhere has developed anything more beautiful than these things out here, if you are able to see the beauty in them.

Today you are living in the beginning of a new era in the life of the world, and our men and women, our boys and girls, are not thinking of themselves. They are not thinking "What can I get for myself?" But they are thinking: "What can I do for somebody else? What can I do for my neighbor?" That is the reason you are so able to join together and work together as communities. You are reaching your hand out to your neighbor.

Now we have thirty-five hundred boys and girls in our Minnesota clubs doing just what you are doing. They are trying to learn something about these wonderful secrets, they are trying to develop their farm homes and after two or three years of that work their greatest pleasure and their greatest aim, and their one thought, is that farm home and that farm community, and you couldn't get them to leave it. It wasn't so very many years ago that the boys and girls were all thinking: "How quick can I get away from the farm; how can I learn to be something in the city?" Now it is just the other way. You are looking forward to building up these farms, making the best homes of them in the nation, and staying there. And your boys and girls will stay there, and this new era of agricultural development will be an era in which we will build up the most beautiful farms and the most beautiful countrysides, and the most beautiful towns, that this nation has ever known, more beautiful than any other nation has ever known, because we are taking advantage of all the good things learned everywhere and bringing them to bear upon our problems here.

I shall tell my boys and girls when I go back what wonderful things you are doing. We sometimes think that we are doing it all, and when I get out in these other States I find that we have a lot to learn. We can get inspiration from others and we can profit by it. I shall take back a message to my boys and girls that will be a great credit to you.

Thank you very much for this opportunity to say just a word to you. I wish you Godspeed in the work. (Applause.)

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REPORT

OF THE

MARYLAND STATE HORTICULTURAL SOCIETY

NINETEENTH ANNUAL MEETING

Held in the Fifth Regiment Armory, Baltimore, Md.

November Fourteenth to Eighteenth

1916

WEDNESDAY, NOVEMBER 15th, AT 10 A. M.

NINETEENTH ANNUAL MEETING, MARYLAND STATE HORTICULTURAL SOCIETY.

PRESIDENT ISAAC H. MOSS: Gentlemen, it is my pleasure to call this meeting to order and to announce that we will now receive the report of our Secretary-Treasurer, Prof. Thomas B. Symons.

REPORT OF SECRETARY-TREASURER.

Mr. President and Members:

Another year has passed and we again meet together in this the nineteenth annual convention of the State Horticultural Society. The past season has been a banner one for the horticultural interests of this State. The great development in fruit growing during the past few years is now literally bearing fruit. The Maryland apple is known far and wide, being sold in the markets of the world.

The enactment of the Maryland Apple Grading and Packing Law by the last Legislature, through the earnest efforts of Senator Orlando Harrison and others, places our State in the forefront of progressive legislation in regard to this industry. While it has not been possible to pack all fruit this fall in accordance with the law, a good start has been made toward establishing standard grades for Maryland apples. This will do more than anything else to advertise this Maryland product in the great markets where competition is keen. I hope the time is not far distant when we can establish uniform standards of grades for all agricultural products.

The growers in our State who have attained notable success in marketing any horticultural crop, are those who have established upon the market a reputation for their grades and pack, whether it be apples, peaches, pears or other fruit.

A special effort has been made to conduct a practical demonstration of grading and packing of apples in accordance with the law.

While discussing legislation, it may be said that the influence of the officers and members of this Society were

a potent factor in securing much beneficial legislation for the agricultural interests in this State during the past year. It was through the organization for "Maryland Week" that comprehensive plans were developed for centering the State's agricultural activities in the State Board of Agriculture and in securing more adequate support for the Maryland State College of Agriculture.

We are also indebted to Senator Harrison and the Legislative Committee for securing an increased appropriation for our Maryland Week meetings and exhibition. It is pleasing also to state that in this effort to better our agricultural interests, we had the helpful support of the Governor and State officers. Therefore, real progress has marked the activities of the Society for the past year.

A most successful summer meeting was held at Hancock, August 29-30. The Western Maryland growers extended a hearty welcome and made elaborate preparations for our meeting. It is believed that these summer meetings serve a most useful purpose in causing our members to become familiar with the horticultural interests in each section of our State. There is no doubt that Maryland's horticultural possibilities in fruits, truck crops, flowers, etc., are being realized more and more throughout the country. Many new settlers have been attracted to the State during the past year to engage in some phase of the industry. Our nearness to markets, supporting more than ten million people, variety of soil and pleasant climate, appeals to those who have lived in less fortunate sections of these United States.

Many new members have joined the Society during the past year, but friends, there are hundreds of growers in the State who have not joined our ranks, mostly because they have not been acquainted with the work the Society is endeavoring to accomplish. Let each of us decide now to secure at least one new member for the Society during the coming year. Let us make it our business to have every grower interested in this great industry become an active member of the Society.

The exhibition this year, I believe, you will all agree, is much better than ever before. There are improvements in

every department of the Show. It is well worthy of our State. With the attendance of the members of the National Grange, and other persons from the national meetings, in session at Washington this week, great results in advertising our State's agricultural possibilities should result.

A special effort has been made this year to have our program for this meeting more interesting and instructive to the members than heretofore. It is hoped that the plan to have live questions discussed by leading growers throughout the State will serve to make all attend the meetings promptly.

As Treasurer I beg to report a balance in the treasury at the end of our fiscal year, September 30, 1916, of $81.64. Total receipts amount to $7,356.45, with expenditures amounting to $7,274.81.

When you realize that our appropriation is $3,000 you can appreciate what must be raised from other sources to conduct our Show and meetings. It has been difficult to handle the finances during the past year. Only recently were we able to pay a note of $2,000 for miscellaneous expenses of the Society which has been carried through the bank by the Secretary.

We approach the new year with accounts paid to date and the hope that our receipts will more than offset our increasing expenses.

Respectfully submitted,

THOMAS B. SYMONS.
Secretary.

FINANCIAL STATEMENT OF TREASURER.

T. B. SYMONS,

In Account with the State Horticultural Society.

Date.	Check.			
1915.				
9/30		By balance		$451.39
10/13	184	S. Bowdoin—Postage	$25.00	
10/18	185	S. Bowdoin—Postage	10.00	
10/22		By deposit		77.00
10/27	187	Mrs. M. Bowdoin—Postage	10.00	
11/6		By deposit		144.53
11/8	188	M. T. Bowdoin—Postage	15.00	
11/8	189	B. & O. R. R. Co.—Mileage book	22.50	

11/9	190	Balto. Md. Engraving Co.—Cuts.	29.91	
11/24		By deposit		1,790.00
11/24		By deposit		110.00
11/24		By deposit		329.50
11/11	191	Graham's Storage Warehouse Co.—Storage charges	120.00	
11/11	192	Thomas & Evans Printing Co.—Premium list and envelopes	138.47	
11/17	193	L. Perrin—Decorator (Armory)	50.00	
11/19	194	Balto. Trans. Co.—Moving exhibit	3.78	
11/20	195	Mrs. Jos. T. Lawton—Expense, Ladies' Room	5.00	
11/20	196	L. Perrin—Decorator (Armory)	25.00	
11/20	197	James W. Boone—Laborers in Armory	200.00	
11/20	198	Wm. Albaugh—Ticket man	65.00	
11/20	199	Charles Weber—Music during Md. Week	240.00	
11/22	200	Capt. T. S. Kirkwood—Rent of Company room	15.00	
11/22	201	Adams Express Co.—Miscellaneous charges	3.60	
11/22	202	Capt. H. W. Jamison—Rent of Company room	15.00	
11/22	203	Fifth Regiment Armory—Light, heat, etc., for the week	362.91	
11/22	204	Adams Express Co.—Miscellaneous charges	1.81	
11/22	205	Jas. T. Quinlin—Labor at Armory	10.00	
11/23	206	A. E. McCarthy—Service, August to November	20.00	
11/23	207	T. B. Symons—Secretary's salary	50.00	
11/23	208	J. E. Metzger—Exps. as judge	3.86	
11/23	209	C. S. Richardson—Exps., travel	2.66	
11/23	210	S. H. Fulton—Expenses as judge	12.41	
11/23	211	Sisco Bros.—Pennants	15.00	
11/23	212	N. R. Henderson—Moving-picture equipment	17.50	
11/23	213	Louis Batzler—Plates for fruit	15.52	
11/23	214	Terminal H. & Fzg. Co.—Express	18.57	
11/23	215	E. C. Maisack—Expenses and clerical labor	20.83	
11/23	216	L. Burritt—Expenses, student	7.69	
11/23	217	E. W. Lanham—Expenses, student	6.58	
11/23	218	J. E. Mills—Expenses, student	7.65	
11/23	219	C. E. Temple—Expenses, week	12.44	
11/23	220	E. C. Maisack—Expenses, week	3.65	
11/23	221	A. E. McCarthy—Expenses and service	21.09	
11/24	222	L. R. Smoot—Expenses, week; student	7.85	
11/24	223	Kenneth Grace—Expenses, week; student	5.94	
11/24	224	L. E. Burlingame—Student	8.84	
11/24	225	Thomas F. Putsche—Burlap for offices	4.75	
11/24	226	B. W. Anspon—Expenses, week	11.20	
11/26	227	M. T. Bowdoin—Postage	5.00	
11/29	228	U. P. Hedrick—Expenses as judge	30.50	
11/29	229	A. J. Farley—Expenses as judge	5.00	

12/2	230	C. G. Williams—Expenses as speaker	35.10	
12/2	231	L. W. Erdman—Expenses, student	7.31	
12/2	232	Nicholas Schmitz—Exps., students	35.22	
12/2	233	Maryland Crop Improvement Association—Appropriation	500.00	
12/3		By deposit		625.31
12/4	234	C. L. Larson—Expenses, student.	4.20	
12/4	235	Whitehead & Hoag Co.—Badges.	88.67	
12/4	236	C. I. Bikle—Express on fruit	6.40	
12/4	237	P. J. Cushen—Carpenters' labor in Armory	110.11	
12/4	238	C. P. Smith—Expenses, week	3.32	
12/4	239	Chas. C. Fulton & Co.—Ad. in Baltimore "American"	3.60	
12/4	240	Little Joe's—Merchandise	2.53	
12/4	241	John Cox's Sons—Posters	4.50	
12/4	242	Bernheimer Bros.—Merchandise	8.50	
12/4	243	The A. S. Abell Co.—Ad. in "Sun"	5.90	
12/4	244	William M. Holladay—Printing letter-heads	16.75	
12/4	245	The News Publishing Co.—Ad. in "News"	2.00	
12/4	246	Hanline Bros.—Paint	1.95	
12/4	247	Samuel Detrow—Express on fruit	7.74	
12/4	248	Thos. F. Putche—Shears (lost)	1.25	
12/5	249	W. H. Alderman—Expenses, judge	32.40	
12/6	250	W. P. Massey	15.10	
12/6	251	H. W. Fristoe—Expenses, student	5.78	
12/6	252	Jas. W. Boone—Labor in Armory	23.71	
12/6	253	Wells Fargo & Co.—Express chgs.	8.77	
12/11		By deposit		256.27
12/14	384	J. S. Kelly—Express on fruit	1.34	
12/14	385	Chas. L. Smith—Express on fruit	8.74	
12/14	386	T. E. Bishoff—Express on fruit.	.53	
12/14	387	W. McC. Brown—Express on fruit	3.01	
12/14	388	Samuel G. Bye—Express on fruit	.43	
12/14	389	J. S. Lapham—Express on fruit	.86	
12/14	390	R. B. Thomas—Express on fruit	1.11	
12/14	391	G. C. Brandenburg—Labor	4.00	
12/14	392	P. & H. Morton Co.—Electric banner	35.00	
12/14	393	R. P. Andrews Paper Co.—Stationery and supplies	2.63	
12/14	394	C. & P. Telephone Co.—Telephone in Secretary's office	2.02	
12/14	395	Walter B. Harris—Freight and drayage	6.63	
12/14	396	Charles Veltie—Drayage	22.00	
12/14	397	Geo. E. Waters Lumber Co.—Lumber for exhibit	189.14	
12/14	398	G. F. Eppley—Expenses, week; student	9.43	
12/14	399	W. M. Hillegeist—Commission on Ads.	16.00	
12/14	400	C. & P. Telephone Co.—Society charges	7.24	
12/14	401	Premium.		
12/14	402	W. M. Hillegeist—Commission on Ads.	4.00	
12/14	403	W. F. Thomas—Publicity	10.85	

12/15	404	Chas. L. Smith—Fruit for Society	6.00	
12/15	405	R. H. Miller—Fruit for Society..	16.00	
12/15	406	Dr. Francis Thomas—Baskets for Society	.90	
12/15	407	Lawrence Gilardi—Express and fruit for Society.....	40.33	
12/15	408	E. N. Cory—Expenses week.....	17.65	
12/15	409	Albert White—Expenses for week	11.46	
12/18	410	H. Beckenstrater—Expenses for week	18.79	
12/23	411	Premium.		
12/23	412	Premium.		
12/23	413	James W. Boone—Labor.....	25.00	
12/24		By deposit.....		313.24
12/27	414	Premium.		
12/27	415	Wm. Feast—Expenses, Florist's Committee	176.11	
12/29	416	J. A. Hooper—Express on fruit..	.72	
1916.				
1/4	417	A. C. Shepherd—Expenses for reporting meeting.....	136.81	
1/4	418	L. Gilardi—Fruit for Society....	7.00	
1/6	419	R. B. Thomas—Ex. Bd. Mtg. and hauling fruit.....	16.43	
1/8	420	Premium.		
1/14	421	H. Beckenstrater—Expenses, judging team.....	8.50	
1/18	422	Hennegan-Bates Co.—Medals for Essay Contest.....	102.70	
1/20	433	Thomas & Evans Printing Co.—Printing program and miscellaneous printing.....	355.29	
1/26		By deposit.....		86.00
1/26	424	E. B. Milburn—Rebate on dues..	1.00	
1/26	425	Premium.		
1/26	426	Premium.		
1/26	427	Hanson Bros.—Express on fruit.	6.20	
1/26	428	Gilbert Porter—Hauling fruit, etc.	16.30	
1/26		By deposit.....		99.60
2/4	429	Chas. Lowndes—Express on fruit.	.50	
2/8	430	W. E. Sanger—Fruit for Society.	7.00	
2/12	431	Premium.		
2/12	432	J. B. S. Norton—Expenses, week.	12.65	
2/14	433	Fidelity & Deposit Co.—Secretary's bond.....	15.00	
2/14	434	Baltimore Chair and Furniture Co.—Chairs for week.....	25.90	
2/14	435	Hotel Rennert—Bd. Mtg. Exps..	9.80	
2/14	436	Hotel Rennert—Expenses, force for week.....	117.94	
2/14	437	Terminal Fzg. & Htg. Co.—Storage	1.20	
2/18	438	M. T. Bowdoin—Stamd. envelopes	5.31	
2/19	439	The Art Sign Co.—Signs for week	16.00	
2/23	440	Torsch & Franz Co.—Badges....	37.10	
2/23	441	The Luncheon Co.—Lunches, Boys' Club Winners.....	41.50	
2/25	442	Whitehead & Hoag Co.—Premium ribbons	3.56	
2/25	443	Meyer & Thalheimer Co.—Office supplies	25.00	
2/25	444	The Art Sign Co.—Signs.....	21.00	

2/25	445	G. P. Read Co.—Printed fruit wrappers	8.10	
2/26	446	M. T. Bowdoin—Stmp. envelopes	5.31	
3/10	447	City Club of Baltimore—Rent room for Corn Club Winners..	2.00	
3/11	448	Graham's Stge. & Whse. Co.—Hauling	63.00	
3/22	449	Francis Fritze—Rebate on dues..	2.00	
3/22	450	The Luncheon Co.—Lunches for Girls' Club Winners	30.00	
4/11	451	George Morrison—Rebate on vases	4.00	
4/21	452	M. T. Bowdoin—Postage	5.00	
4/27	453	R. M. Sutton Co.—Bunting	97.22	
4/28		By deposit		131.95
4/29	454	A. E. McCarthy—Service, December-February	15.00	
5/13	455	M. T. Bowdoin—Postal cards	1.00	
5/31	456	R. P. Andrews Co.—Stationery..	7.10	
6/1	457	E. H. Snyder & Son—Rebate on fruit lost	10.00	
6/2	458	Thomas & Evans Printing Co.—Merchandise	5.71	
6/10	459	A. E. McCarthy—Service, March-May	15.00	
5/15	460	M. T. Bowdoin—Postal cards	1.00	
6/17		By deposit		28.33
6/17		By appropriation		2,000.00
6/17		By appropriation		500.00
6/17		By deposit		30.12
6/17		By deposit		19.00
6/22	461	H. E. Warner—Expenses, Home State Tour and Publicity	116.47	
6/23	462	M. T. Bowdoin—Postage (mailing Report)	35.00	
6/30		By deposit		35.00
7/17	463	M. T. Bowdoin—Postal cards	6.00	
7/21	464	Balto.-Md. Eng. Co.—Cuts for Report	26.66	
7/27	465	M. T. Bowdoin—Postage	10.00	
8/3		By deposit		3,001.00
8/3		By deposit		1.00
8/5	466	T. B. Symons—Salary, Jan., '16	100.00	
8/5	467	T. B. Symons—Traveling exps...	34.68	
8/5	468	Wm. M. Holladay—Printing Report, etc	300.75	
8/5	469	A. E. McCarthy—Services, June-July	10.00	
8/21	470	M. T. Bowdoin—Postage	10.00	
8/24	471	M. T. Bowdoin—Postage	5.00	
9/1	472	J. R. Adams—Merchandise	1.98	
9/2		By deposit		74.62
9/2	473	Jas. T. Hughes Co.—Photo Ptg..	1.00	
9/2	474	M. G. Kains—Expenses, Summer Meeting	19.52	
9/2	475	M. T. Bowdoin—Postage	10.00	
9/29		By deposit		38.00
		Total premiums	$2,077.38	
		Cancelled checks from 1915, a/c—No. 123, $1.50; No. 133, $.75	2.25	

Debits: Note	$725.08		
Note and interest	2,026.73		
Revenue	.40		
Revenue	.42		
Interest	30.55		
		2,783.18	
		$10,062.24	
Outstanding checks		2.00	
		$10,060.24	
Bank balance		81.64	
		$10,141.88	$10,141.88

PRESIDENT ISAAC H. MOSS: The next on our programme, Mr. Secretary, is reports of special committees, but I understand there are no reports to be submitted, and that being the case, I will take this opportunity to make a few remarks.

REMARKS.

By ISAAC H. MOSS,
President of the Society.

I must say that I appreciate the honor of having been elected President of the Maryland Horticultural Society. I believe it is an honor that any citizen of Maryland should be proud of. I am sure it is one of the organizations that is doing more for the good of the State than any other organization in it. It is an organization that is progressive. The past year has seen marked progress in the affairs of Maryland Horticultural Society, and, gentlemen, when we look back to about eighteen years ago, I remember I walked up Baltimore street and saw the small exhibit that the Horticultural Society had placed in Baltimore at the Eutaw House, I went in and looked over the exhibit and it only required three or four minutes to do it, and it was something of an exhibit to me at that time. But when we consider that exhibition and compare it with the beautiful Show we have in the hall today it shows what progress the Society has been making, and, gentlemen, simply to go over that exhibit and look at it does not convey to the average person an appreciation of the amount of labor and trouble that a great many of the members have gone to. As far as my experience goes, it is mostly

with the Floral Committee, and I know that committee has worked hard and faithfully, and they have devoted their time right along for the last six months to try to perfect the Show that we have here today. And I feel that the Show today is a success, and I only hope that we will have a large attendance. After we go to work to get up a good Show, and then have a small attendance, it seems to me that it is quite a disappointment to the members who have gone to the work and labor to try to make a good showing.

The Maryland Horticultural Society meeting always has been interesting to me and I think most of the members have been looking forward to these annual meetings as one of the events of the year, and it has proved to be such, and another thing in connection with this Society that I have enjoyed very much in the last two or three years, is our summer meeting. Last summer at the meeting at Hancock we went up in a motor car, and it was quite a pleasure to me and to quite a number from Baltimore who motored up to find that we had a good road all the way from Baltimore to Hancock, and, in fact, all parts of Maryland that I have been through in the last three or four years has shown that Maryland is one of the most progressive States of any of the States in the Union in reference to roads. In fact, I have understood that we have better roads for the acreage of our State than any of the States in the Union. While at Hancock, the second day, we went over into Virginia, and there was a marked difference between the roads in Maryland and the roads in Virginia.

I have understood that the floral industry has not advanced as much as the fruit and the truck growers. I don't know, but I believe the fruit and truck growers and the farmer are commanding a great deal more for their products now than the florists are in proportion. I have been in the florist business for a number of years, and the prices we are getting now for the most of our products are about the same as they were fifteen or twenty years ago, and I know that the farmers' products have advanced wonderfully in price in the last two or three years. They tell me that the total value of the floricultural product at the last

census was something in the neighborhood of six hundred thousand dollars, but I am sure in the last five or six years it has almost, if not quite, doubled that amount.

I remember four years ago we had a convention in Baltimore, and the Park Board decorated the City Hall with flowers and foliage plants. And the people of Baltimore were so well pleased with the result of the Park Board's work that every year since it has been done, and it seems to have become an established custom now, for the Park Board to decorate the City Hall, and I think every one who has had occasion to go past the City Hall has viewed with pleasure the decorations that we have placed there. Not only the Park Board, but the Women's Civic Home Garden Committee have taken an interest in getting the property owners around the city to decorate their yards with flowers. Last year a committee from the Gardeners' Club took a trip around the city, and we were quite surprised to see the number of people taking an interest in growing plants and improving their yards.

Gentlemen, I haven't anything much to say, except I feel that we ought to give some tribute to the gentleman who has worked so hard for this Society, and I think to him, our good friend, Professor Thomas B. Symons, more than to any one else, is due the success of the Maryland Horticultural Society and our annual exhibits. I have often wondered how he could get through with the amount of work he does and come through with a smiling face at all times, because it seems to me that the amount of work is something stupendous. I don't know of any other man in the State of Maryland who could do the work. (Applause.) I feel that we ought to try to give credit where credit is due. In my business a great many people come in and buy flowers for their friends after they have left this world and can't enjoy them, and I always feel if we can appreciate the work a man is doing and tell him about it, that he will be encouraged to go on and do better.

For you ladies and gentlemen I am sorry you haven't a better speaker to address you this morning, but I know there are going to be some good speakers here today, so I will not take up your time any longer. Thank you. (Applause.)

PRESIDENT ISAAC H. MOSS: Ladies and gentlemen, you will now be addressed by Mr. C. J. Tyson, who will speak on the methods of handling apples.

MODERN METHODS OF HANDLING THE APPLE CROP.

C. J. TYSON, Floradale, Pa.

Ladies and Gentlemen and Members of the Maryland Horticultural Society:

It gives me more pleasure than I can tell you to be here today, partly because many of you are old friends who I have not seen for a year or more, partly because I always like to come to your meetings, and it gives me particular pleasure because I see improvement in the work you have been doing, as shown in your exhibition here.

I have had the pleasure of attending these shows for quite a number of years, and the short time I spent in looking over the exhibits this morning shows me a great improvement over past years, which points to the value that really lies in these exhibitions. That question may come to our minds sometimes, whether all of this work and expense really pays; whether it pays the apple grower to take the trouble that he must take to get up an exhibit and bring it to these meetings. The more I think about that the more thoroughly I am convinced that it is entirely worth while, not only from the point of view of the Association, of the educational interests of the State, because they are doing a good work in getting good results, but from the point of view of the grower. It gets us up on our toes, so to speak. It puts in force competition, that we might not realize it was necessary for us to meet, if we did not come up against our neighbors in these exhibitions.

I have been asked to take part in the programme this morning, and I am going to commit an offense that I hope will not be unpardonable by reading a short paper. I am so well acquainted with my own limitations that I know I would not probably be able to put before you what I want to say in good shape if I were to attempt to do it extemporaneously.

I will try to make this paper short, and if you will stop me or say what you have to say at the end, I will be able to discuss any matters with you.

Apple Grades and Grading.

Can you tell me of any other business or profession that is so ready to disclose its methods and its business secrets as that of the fruit grower? In this we are all alike. I have visited some of you on your home plantations, and I have taken back with me hints that have helped in my own work. much more, I feel sure, that I can return to you today. Be that as it may, I want to assure you right in the beginning that you are welcome to what I know, and if I fail to bring out the points you are interested in, I hope you will ask questions. A good, lively discussion is better than any paper ever written for getting at the real kernels of information.

I hesitate, somewhat, to stand before this Maryland audience beside whose orchard plantings our own three hundred odd acres may seem small. Let me assure you, however, that to us it has the proportions of a *real* orchard, quite large enough to mean serious anxiety with its failures and fairly satisfactory results in its successes. I want to make clear this point. Our orchard is neither a plaything nor a side issue, and in adopting new methods, as well as in sticking to many of the old and tried ones, it is done with the single object of the future good of the orchard and the net returns to be gained.

Your Secretary has asked me to discuss the question of grades and grading, the subject which will have as much attention as any other before the horticultural meetings this winter, largely because nearly all apple-growing States are either just about to adopt laws fixing standard grades, or have already made laws and are now trying to adopt their packing methods to fit the standards thus established.

As a grower who has tried to grow good fruit and to pack it honestly, I am feeling more and more that most of the grading laws already passed are too complicated, and that they attempt to do too much. Perhaps I should not say this

for I know that Maryland has a new law of the kind I have in mind. I am just as anxious as anyone can be that this law shall work out right and prove to be just what your Maryland apple growers need. Here, it seems to me, is the weak point of the present New York law, of the proposed Virginia law, and if you will pardon me, of your Maryland law as well. All of them fix standards based on percentages of color and freedom from blemish, and attach severe penalties for violation. Of course no iron-clad rule can be formulated to determine these percentages, and they must be left to the personal judgment of the inspector, modified of course by such instructions as the State authority then in office may see fit to give.

If we had time I should like to bring before this audience three barrels of apples of three different varieties, and then ask you to inspect the fruit and each for himself write down the percentage of full color for the variety, and the percentage of all defects combined. Do you know that in all probability there would be a variation of 25 per cent. between your opinions? What then can you expect of inspectors who do not have your knowledge and training in fruit matters?

Of course I know the thought that has been back of all these state laws; namely, that standard grades shall be established so that "Fancy," "A" or "B" shall mean the same the country over, and so that fruit may be quoted and sold by these terms without danger of misunderstanding. I cannot see how this can be brought about so long as human nature remains the same and human frailties continue to exist. As a matter of fact, I have seen New York standard "A" grade Baldwins from different orchards in different sections of the State selling on the same market with a difference of nearly a dollar a barrel in their selling value.

Now, as I said before, I do not mean to knock your Maryland law, and I do hope you will give it every kind of backing and just make it work out. Here is the point: as more and more of the States fall in line with grading laws, someone will propose a national law—indeed it is already being talked about—and eventually such a law will be passed. When that time comes it will be up to all of us who live in apple growing

States, to instruct our Congressmen as to what we need. By that time we shall have tried out our State laws, with their rather complicated standards, and it is my firm belief that most of us then will be ready to support a national law for the packing and sale of apples in closed packages; both for intrastate as well as for interstate commerce, based on just four simple requirements:

1st. Each package must be of standard size (fixed by the law) and must be marked with the minimum contents in terms of weight, measure or numerical content.

2nd. Each package must be marked with the correct name of the variety, or if unknown, it must be marked "Unknown."

3rd. If a barrel it must be marked with the minimum size of the fruit contained.

4th. It must bear the name and postoffice address of the person by whom packed, or in whose interest packed.

Of these the last has always seemed to me to be the most important, for very few of us will be willing to send out as our product apples overfaced or packed in other than an honest manner.

Of course penalties and the necessary machinery for execution must be provided, but I really feel that very little is needed beyond these four provisions.

Now I am sure you will take what I have said up to this point in the spirit in which it is meant, which certainly is not a spirit of criticism.

I am going to give you a few points about our own packing methods, and yet I hesitate to make any very positive statements, for as I grow older I am beginning to realize how much there is to be learned and how little we really know about the *best* methods.

If I had come before you on this subject five years ago, it would have been to describe handling and packing apples in the orchard. Even then we were doing some box packing, and of course finding it best to do this work in an improvised packing-house. This led us in 1913 to try bringing our whole crop (that year about 4,000 barrels) to the barn for packing. It worked so well that we never have wanted to change back, even aside from the use of graders, which would settle the

matter if a single doubt remained. In the first place, the work can be done cheaper—from three to five cents a barrel. It can be done better because it is possible to make the conditions uniform and to handle barrel after barrel exactly alike: the barrels can be kept dry and clean both before and after filling; the help can be better organized and work to better advantage than when moving from place to place in the orchard, and it is much easier to use female help in the packing-house, a material advantage in seasons like the present one. The time lost in moving from place to place in the orchard would more than pay for the hauling to the packing-house, with the additional advantage of having the heavy filled barrels at one place adjacent to a hard road to the station or storage, making it possible to draw heavier loads.

We have converted one end of a large bank barn into a fairly convenient and satisfactory packing-house, and while we now see lots of things that might be improved, they are only in the line of progress and will serve as lessons when we come to build a real packing-house.

One feature of our barn packing-house that has proven itself immensely valuable, and which I shall emphasize as I go along, is the ample storage for empties provided by the space formerly used for hay and straw. This is much more commodious than we should have dreamed of providing had we built a new packing-house four years ago, and yet it is one of the essentials of a convenient plant. For instance, when we started to barrel this year's crop we had more than ten thousand empties all ready coopered, one end nailed and head-lined, stored over the packing-house all ready to be sent down an inclined chute to the men who stenciled and opened them.

Another feature that is worth providing, when possible, is a basement or cellar under the main packing floor, to expedite carrying away the culls and to provide temporary storage for second-grade fruit when needed. Then the matter of light cannot be emphasized too strongly. Every operation in the packing-house requires just as much light as it is possible to give it. Do not try to build your packing-house on too

small a scale. Facing, filling the barrels and heading require lots of room, to say nothing of stenciling ahead and rolling away after packing. If you feel that your present crop does not warrant building a large house, then much better use a barn floor or some other building that can be spared temporarily; or if you do build a small packing-house, plan in such a way as to make later additions practical. I consider these few points essential in arranging a packing-house.

Lots of things can be done to save labor and to make the plant convenient to handle. It is an easy matter to arrange a few simple conveyors to save a lot of steps, as well as some hard work. Of course these can be just as elaborate as the individual may see fit. And then we have the graders. Now it is not at all necessary to fit a packing-house with graders in order to make it a lot more desirable than packing in the orchard, but I doubt whether many people nowadays will give serious thought to planning a packing-house without also considering the use of modern, up-to-date graders. Certain it is that the past two years has seen hundreds of graders bought and put to work by the apple growers of the East. Two principal causes have doubtless hastened this revolution in packing methods, one leading into the other. Acknowledge it or not, the Northwest has proven a real competitor, with her accurately graded and carefully packed boxes of fruit. Partly to meet this competition and to compel our Eastern growers to take measures to save themselves before it was too late, state laws have been passed, setting rigid requirements in the matter of sizes.

The sizing of apples always has been a rather haphazard operation, not more than one person in a dozen being able to do real accurate sizing by eye. This answered fairly well until our State laws began making it a misdemeanor to pack more than five percentum of undersize apples in our barrels and fixing a penalty therefor. At this point orchardists and manufacturers of orchard machinery set to work to contrive machines that would do this sizing with mechanical accuracy and at least approximate perfect results.

Graders have been in quite general use in the Northwest for some years, and many of these western graders have been

brought East and used in some cases with satisfactory results. For most part, however, these western graders, built for box apple sizing, have proven almost too accurate and too slow for our barrel packing. Several machines invented and manufactured in the East with the needs of the barrel packer in mind, seem to me to be giving the very best results.

To do satisfactory work a grader must have sufficient capacity to handle a generous day's run of apples; it must handle the fruit carefully to avoid bruises; it should be liberally provided with horizontal conveyors, from which the defective apples can be picked, and others to convey the sized fruit to the barrels; and so far as I have observed, the graders doing the best work are those which require the apples to pass through some arrangement of round holes in the process of sizing. In this respect apples differ from oranges, peaches or other round fruit, because many of them are flat, oblong or conical.

Several things must be decided before ordering a grader. In the first place, how many sizes do you wish to make? A great many of the graders now in use provide just three sizes: apples under 2¼ inches, between 2¼ and 2½, and all those over 2½ inches. Of course these are well worth while, and yet I have felt from the beginning that the real value of the grader lay in its ability to size apples for barreling, at least approximately the sizes used in boxing. This theory was just taking definite shape when it was suddenly changed into conviction by losing a desirable grocer customer to a competitor who undertook to sell Stayman apples 320 to the barrel. That opened my eyes wide and I talked with grocers and fruit stand men, and with few exceptions they agreed that if they could buy Eastern apples in barrels one size from top to bottom, fairly represented by the face, it would go a long way toward settling the Western box competition.

Strangely enough, the wholesale apple men took the opposite view, and in establishing our graders making four sizes with ¼-inch variation from 2¼ to 3 inches, it was done in the face of warnings from some of the largest and best wholesale shippers and handlers of apples in New York and Chicago that it simply would not work. I recall quite distinctly in a

discussion before the convention of the International Apple Shippers' Association in which I had advocated accurate sizing for barreled apples, one very earnest dealer took the floor with this expression, "You may talk yourself black in the face, but you can't convince me that it will ever pay to pack box apples in barrels." That was two years ago. This year that same man's house tried hard to secure the handling of our account in Chicago, largely because our apples were sized and the trade was beginning to know it. We have just finished barreling our second crop in the sizes described above, and the only change I have in mind is to make one more size, running 3¼ inches.

It has worked out and it has paid, and I am more and more convinced that progress lies in the direction we are headed. There are, of course, endless details of picking and handling, as well as grading and marketing. They really do not come within the scope of this paper and they would take hours to discuss. Here is a better way: next summer when the roads are good, get out your "Henry" or your Packard, or your Pierce-Arrow—suit yourselves as to that—and come up to see us and we will talk these things all over right on the spot. You may not get anything even then that will make you any money, but we shall be mighty glad to see you. Thank you all.

PRESIDENT ISAAC H. MOSS: Gentlemen, this matter is open for discussion, and the discussion will be opened by Mr. J. A. Cohill, one of the young men of the State, and we want to impress upon the members that we hope that the young men will take part largely in the discussion. Mr. Cohill.

DISCUSSION.

Led by J. A. COHILL, Hancock, Md.

They have me here, apparently, for an argument, and as Mr. Tyson read his paper I made note of two or three things that struck me forcibly. Mr. Tyson has brought out a great many important questions in his paper that should be discussed among the growers here this morning, and I hope we can have some discussion of this important problem.

Mr. Tyson seems to think that the Maryland State law is too strict. Has any grower here put up any apples according to the Maryland State law this year?

MR. SAMUEL P. THOMAS: I found, as Mr. Tyson said, that there was a good deal of difficulty, as, for instance, with regard to color for variety, but I think it is an advantage, and I certainly am heartily in favor of having the standard high.

MR. J. A. COHILL: Did you open a barrel and pick out the imperfections to see just how the law compared with your barreled apples?

MR. SAMUEL P. THOMAS: We reopened some that were packed for Maryland Week. We thought we were getting a very good line on the A grade.

MR. J. A. COHILL: You didn't mark any of your fruit, then, "Fancy?" As I understand it, there is a Fancy grade and then an A grade.

MR. SAMUEL P. THOMAS: No; we considered that Fancy grade was the grade you could see here.

MR. J. A. COHILL: Then your barrel was put up as Standard A grade?

MR. SAMUEL P. THOMAS: Yes, sir.

MR. J. A. COHILL: Do you think that the grade marked "Fancy" is so high that there are few apples in your orchard that will come up to that grade?

MR. SAMUEL P. THOMAS: That is the way we felt about it.

MR. J. A. COHILL: Mr. Thomas, did you ever mark any of your apples in accordance with the law?

MR. S. P. THOMAS: Yes, sir. We are doing that now.

MR. J. A. COHILL: Do you think you are putting them up as the law requires you to?

MR. S. P. THOMAS: I believe we are putting them up as good as the A grade.

MR. J. A. COHILL: Don't you think you would come into the Fancy grade?

MR. S. P. THOMAS: I don't think so, except the apples we put in boxes.

MR. J. A. COHILL: We packed our apples this season as we have done heretofore, using our regular grades and pack-

ing as well as possible under our conditions. It is my belief that we should analyze the requirements of the law very carefully and arrange to pack our apples in such a way as will suit demands of our markets and at the same time establish standards for Maryland apples.

Mr. Tyson brought out another point. He packed some boxed apples. Very few of us Eastern growers are packing boxed apples. I saw Mr. Tyson packing them, and he packs them well. It has been a question in my mind—does it pay the Eastern Shore growers to pack boxed apples? I would like to hear from Mr. Tyson.

MR. C. J. TYSON: I don't know whether I can give an answer right off to that question. We have packed boxed apples, more or less, for the last five or six years, usually one, two or three, or four thousand boxes, and we have developed this point, that there is no use whatever in the Eastern grower packing anything in boxes except very fancy fruit, and of varieties that are of high quality. For instance, two years ago we had a lot of York Imperials left that we thought were very pretty. We thought they would box very well, and we packed about a thousand boxes. They were sold from cold storage for a little less for three boxes than we got for a barrel of the same variety at the same time, and, of course, they cost us more to pack. We now box most of our fancy Staymans. We are helped out in that, partly by having developed a trade direct to the consumer, which has worked very nicely so far as it has gone, and partly to some fancy grocery store trade which is familiar with our particular brand of apples. In that way we have been able to get good prices for these fancy boxed apples.

A MEMBER: Do you pack smaller than the regular apple box?

MR. C. J. TYSON: Nothing smaller than the standard apple box.

MR. J. A. COHILL: What do you do with your choice Staymans?

MR. C. J. TYSON: We make a grade that we call our Choice Grade, and this year we have been selling that for about a dollar less than the Fancy Grade of the same variety.

MR. J. A. COHILL: Now, then, the question is, does the increase in the price you receive for apples packed in boxes, pay for the additional cost of packing, as compared with the cost of packing the same amount of fruit of similar grade in barrels?

MR. C. J. TYSON: On our Staymans it did. On some of the other varieties it did not.

MR. J. A. COHILL: Of course, you are putting up your boxes and selling direct to the consumer and you get a little more than some of us that do not sell direct. We are not in a position to sell direct to the consumer, and we have to sell through the commission merchants. Could we sell to the commission merchants this year and make more out of boxed apples?

MR. C. J. TYSON: That is the point I tried to make. I don't think you could. It has been my experience that it is nip and tuck. Some years you may, but, as a general proposition, it doesn't seem to work out that way. It isn't possible to get enough difference between the price of the three boxes and the barrel to pay for that depression in the second grade.

MR. J. A. COHILL: Then, Mr. Tyson, why is it that the Western grower puts up fancy boxed apples and we don't? That is, why is it they don't ship any barrels East at all?

MR. C. J. TYSON: They can't afford to pay the freight on them. They don't ship these grades across the country where the freight is approximately $1.50 a barrel because they couldn't ship them here and compete with the apples we grow here and put on the market at thirty-five or forty cents a barrel.

MR. J. A. COHILL: Mr. Sanger, what do you think about this?

MR. W. E. SANGER: I have only a local trade, and it would be my judgment, as Mr. Tyson has said, that it could be made to pay only where you deal direct with the consumer.

SECRETARY THOMAS B. SYMONS: Ladies and gentlemen, I think it is due the very efficient leader of this discussion to explain that, while this law passed and was effective July 1st, the State Board of Agriculture did not issue its regulations

until late in September or October, and there was no effort made by the Board to enforce the law this season. I think it is a very good thing because I believe in this character of legislation as well as in legislation for the control of insect pests and fungous diseases, we can do more through education than we can, oftentimes, in the enforcement of the law. There will now be ample opportunity for all the growers to become familiar with the law and its requirements before another season.

MR. J. A. COHILL: Mr. Sanger, why do you think barrels should be faced?

MR. W. E. SANGER: Because it is customary, that's all. I don't believe in facing a barrel of apples.

MR. J. A. COHILL: You wouldn't pick out the nicest colored ones for the top, but just pick out the apples and put them in the barrel?

MR. HARTZHORN: I have not found it necessary to face barrels in order to sell the small amount of fruit I have had.

MR. J. A. COHILL: Mr. Wertz, what do you think about facing of apples?

MR. WERTZ: I have always faced them. The buyers demand that. I had 5,000 barrels in Philadelphia storage one winter. I did not face them. The result was I got from twenty-five to fifty cents a barrel less from the Philadelphia market all through the winter because they were not faced. If they had been faced, not to the extent of being dishonest, I might have gotten from twenty-five to fifty cents more. Since then I have been facing, and yet I don't like to do it. We don't try to make the rest of the barrel any worse than the face, but when you have a lot to do there is bound to be a certain variation, and you can't get away from it. There are certain times when a barrel will be faced some distance down, and the remainder of the barrel will show an apparent condition of dishonesty. We did try not to use just the best for the face, yet it is only human nature to pick out the best for that purpose. There were some others put into the barrel just as good, but still the face of the barrel, I guess, was about the best part of it.

MR. BRYAN: I am very new in the business and want to apologize for entering this discussion. At the same time, I have had a little experience in the grading and sizing proposition that might be interesting to some of you. I don't believe there would ever be an Oregon or Washington apple come east of Chicago if our growers would grade and pack as they should. We have the quality, we have the situation, we have everything, except our method of packing. My crop is small; only 600 barrels so far. I pack up to 3¼ inches in diameter, make five sizes, three grades—five sizes in the first two grades and three sizes in the third grade. Those sizes bring me in about fifty cents more a barrel if over four inches across. Our 3¾-inch apples brought six dollars a barrel on consignment for the last three years where the same variety and grade of apple in the 3¼-inch size would bring $5.50, the 3-inch size, $5.00, and the 2¾-inch, $4.50.

MR. J. A. COHILL: Your experience has been, then, that the larger apple will command a higher price. Right there, though, is where I can't understand why we fall down. Do you sell to local dealers?

MR. BRYAN: Not at all; entirely on consignment to commission merchants.

MR. J. A. COHILL: Well, now, we do the same business through a great many commission merchants all over the country, and, for some reason or other, they will not pay us a higher price for the larger size.

MR. BRYAN: There is just one reason. You don't pack them right.

MR. J. A. COHILL: Well, I expect we will have to take your advice and put them up right. (Laughter.) When did you sell them for six dollars a barrel?

MR. BRYAN: I got my returns for the last carload last week.

MR. J. A. COHILL: We sold in September when there were apples on the market. When they got up to $2.50 we thought we had a reasonable profit, and we let them go, and, for some unknown reason, the market went up. Last year we sold them for three dollars a barrel, and they lost a dollar a barrel in getting rid of them.

MR. BRYAN: One thing more I would like to say. One great difficulty about our discussion in this matter, I find, in talking to the various growers and fruit men—particularly in talking to the people who have so-called "grading machines" to sell — is that there is a great misapprehension of terms. People, dealers and sellers of machines speak of "graders" and "grading" when they have no conception of grades and grading. They simply mean sizing. Now what we want is grading. You size to get your prices, but you grade to get your market. The thing that is going to keep the Northwestern apples out of here entirely is an honest pack. The law that was passed in Maryland was never intended to be applied to the conscientious packer. Nobody who packs honestly according to the label on his barrel, I venture to say, is ever going to have a barrel of his apples opened and have a regular Shylock examination made of every apple in that barrel.

MR. J. A. COHILL: Where did you sell your apples?

MR. BRYAN: We sold some in Boston, some in Baltimore and some in Philadelphia.

PRESIDENT ISAAC H. MOSS: Gentlemen, this discussion is all very interesting. We are very pleased to have you discuss these matters, but the time is passing and there is quite a list on the programme to be gone through. I would like to ask Mr. Bentley Thomas if he has anything to say.

MR. R. BENTLEY THOMAS: Mr. Chairman, the ground has been so well covered I don't think there is anything left to say. One point I would like to make. I am afraid I will have to agree with some that have gone before, that our law is very strict, but I think the main trouble is with the packing, not with the law. What we want in this State—need in this State—is a pack which a man two thousand miles away can order by the law and depend on it. You go to the store and get a package of Uneeda biscuits, and you know what that is going to contain before you open it, or a package of Graham crackers—you know about what they will look like and taste like on the inside. The law may be a little strict, but if we can't pack a fancy grade, let's pack the A or B

grade, and pack that right, and market it. When buyers find out we are packing according to a system they will telegraph their orders, and they won't look into your barrels to find out what you have in them.

PRESIDENT ISAAC H. MOSS: Gentlemen, we will have to bring this discussion to a close.

A MEMBER: I just want to ask one question of some of these old packers. This year we got our apples in perfectly dry and never had any rain on them at all. There came a cool spell during our packing, and then we had some warm days, and those apples were dripping wet. What should we do? We went ahead and packed, but I don't know whether it was right or not.

MR. ANDREW J. HANSON: In general, when that warm spell comes, stop and open up the packing-house for a day or two. We think the dampness will show through the wrappers and make them look soft, and we generally stop packing for a day and let them dry off, which they will do in about forty-eight hours.

MR. PLUMMER: Is there any fruit grower in the State packing under the Sulzer bill—the national law? We have been packing under it for three years.

PRESIDENT ISAAC H. MOSS: Gentlemen, we will have to pass on to the next question, which is: "Do you plant trees in fall or spring? Why?"

"Would you plant fillers in your orchard?"

"Should young trees be planted in a bearing orchard to take the place of any that have been taken out?"

Mr. G. Hale Harrison will lead this discussion, and I will request that you make it as brief as possible. (Applause.)

DISCUSSION.

Led by G. HALE HARRISON, Berlin, Md.

Ladies and Gentlemen:

To take up the first question—"Do you plant trees in fall or spring? Why?" We generally recommend, in any section of the country south of the Mason and Dixon Line, and in parts of Southern New Jersey, and in parts of Long Island, that

it is better to plant fruit trees in the fall than in the spring. It is better to plant trees during the late fall, that is, during November, and probably the first two weeks of December, rather than in September. The reason for this is that fruit trees are not matured so that they can be shipped from the nurseries through the month of September. If the trees are planted during the fall, the root system will develop better. That is, some of the root hairs will start and develop during the fall, and the trees will be better set during the early spring, so that they can start growing when spring opens.

Just as soon as the trees are planted, or soon after, they should be pruned. By pruning you reduce the amount of evaporation from the tree, thereby insuring better growth next season. It is the general opinion that trees will produce as large an amount of growth when planted in the fall in the aforementioned sections, and, of course, from the nursery end of the business, we will admit there are less trees lost from fall planting than from spring planting.

In all those sections north of Mason and Dixon Line we would advise those people to place an order for their nursery trees sometime during the summer or early fall, so the stock can be dug during the early fall and shipped so they can be heeled in during the late fall and the tops and roots covered with dirt. In the early spring it is possible to plant the fruit trees during the first few days of the late winter or early spring. The number of trees that live when planted in the spring depends entirely on the man who is planting them. In April or May it is a good plan to use water when planting them. The tree should be set two to three inches deeper than it was grown in the nursery row. It is very important that the land should be tamped. It is safe to plant fruit trees any time during the fall, winter or spring, provided there is not any frost in the ground at that time. If there are any questions on this, I would be glad to have you ask them. I would like to call on Mr. E. P. Cohill for his opinion as to spring and fall planting.

MR. E. P. COHILL: We receive them in October, and heel them in, and then plant them late, during the fall and some-

times during the winter. I don't know whether we have planted any in January, but we have in February, and we find that the trees get a better set. The dirt becomes more compact around the roots, and the trees start off better if planted in the fall or during the winter.

MR. HARTZHORN: Do the nurserymen dig their trees for spring sales as well as for fall sales at the same time?

MR. G. HALE HARRISON: No, sir.

MR. HARTZHORN: Then are the trees dormant?

MR. G. HALE HARRISON: You don't want to plant in September because the trees are not dormant at that time. Some trees in the nursery hold their leaves longer than in the orchard. This is only done in cases where the grower absolutely insists that the trees shall be shipped on a certain day. If you send to a Southern nursery, and want your trees shipped the first day of October, then it is necessary to strip. As a matter of fact, it costs us considerable money to strip these leaves, and it is a saving to us not to have these trees stripped. I would like to call on Mr. Newark regarding fall planting.

MR. NEWARK: Ladies and gentlemen, I prefer fall planting ninety-nine times out of a hundred if I were setting an orchard. The early spring and later winter rain settle the ground firmly. Too many growers set out an orchard and do not tamp the ground sufficiently around the fruit trees. That is the cause of more failure from trees not growing than any other that I know of. Trees will grow better planted in the fall of the year if the ground is thoroughly tamped.

MR. M. G. KAINS: I believe in "practising what I preach." I have been "preaching" several years in college, and now, for myself, I am putting in practice some of the preaching. This fall, on Long Island, we have put in crabs, currants and gooseberries. We have peaches, apples, pears and cherries to come in. We have no objection whatever to having these trees arrive at any time before we are ready to plant, provided that they have dropped their leaves naturally. This fall we ordered stock from five different nursery companies, with the stipulation in all but one case that the leaves be dropped naturally. It was an oversight in this one case

that the leaves did not drop, that is to say, we didn't ask to have them dropped, and these have come forward with the leaves clipped. Now I don't know how they are going to turn out, but I am curious to find out how they will turn out by spring. Our climate on Long Island is a very favorable one. The soil seldom freezes hard until after New Year's. There may be an inch or two of frost, but in a short time that frost disappears from the ground and we can go on working. I fully expect to find every one of these fruits come through very well, unless, it may be, the peaches. Nearly all of the nurserymen that I consulted on this matter said: "Don't plant your peaches in the fall," but we have a few that we are trying out for the first time.

MR. G. HALE HARRISON: Mr. Kains, I wish every one who orders trees from our nursery would put in that same stipulation, that they don't want the trees stripped. Any other question?

A MEMBER: If they are shipped in November, they are liable to die back five or six inches during the winter.

MR. G. HALE HARRISON: Any other questions on that point?

MR. HARTZHORN: I have always been in favor of planting in the spring because it is a question of getting trees from the nursery in a dormant condition. I am very glad to hear that there is a possibility of getting trees planted in the fall where the leaves are not stripped.

MR. G. HALE HARRISON: "Would you plant fillers in your orchard?" Some of the early-bearing varieties of apples or pears should be planted. The fillers will pay for the development of the permanent or standard trees. A standard should be planted forty feet, at least, apart. That makes possible three fillers to one standard. A man should not plant fillers in the orchard unless he has the nerve to cut the fillers out at the time when the permanent trees demand the use of the ground. The prime reason for fillers in the orchard is that they put the orchard on a paying basis in a shorter time than if planted only in permanent trees.

There are several good combinations for fillers, or for instance, peaches for permanent apples, or our summer varieties of apples, but I would not advise a man to plant pears and

apples together, which often happens in some parts of the country.

A MEMBER: How about sour cherries?

MR. G. HALE HARRISON: It is generally the best custom to plant them in an orchard by themselves, not to mix them up with apples or peaches.

A MEMBER: How about spraying in an orchard where you have fillers, where you use peaches as fillers for apples?

MR. G. HALE HARRISON: Of course, you don't use the same spray mixture for peaches as for apples, but the amount of money you receive for your peach trees offsets this disadvantage.

A MEMBER: One thing I have noticed in the case of peaches planted with apples. The curculio, which troubles the peaches, will pass over to the apples, whereas in orchards where there are no peaches or plums the curculio isn't nearly so bad. I would like to know if you have had that same experience.

MR. J. A. COHILL: We had that same trouble. We cut out the peach trees, and the apples haven't amounted to any thing yet. I don't believe they will ever. Why not plant apples as fillers?

MR. G. HALE HARRISON: That is all right—summer apples, such as Williams, Early Red, Duchess, and for fall apples varieties like Grimes Golden.

MR. S. H. FULTON: I might say, in this connection, that fourteen years ago we planted an orchard of 15,000 peach trees with apple fillers. After fourteen years we hardly know whether to cut out the apples or the peaches. We haven't cut out either yet. They have both done fairly well, but, from our experience, we thought some of the peach trees wouldn't live very long, and we put the apples in as an insurance, but we wouldn't mix them again. If we wanted to use fillers, we would use apple fillers. With peaches the only thing we are afraid of is borers. We can control the yellows.

MR. J. A. COHILL: Does curculio bother you any on your apples?

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MR. S. H. FULTON: No, but it is hard to handle the two kinds of fruit together, and we don't like to cut out the peach orchard right in its prime.

A MEMBER: Did anybody ever see a curculio killed with arsenate of lead?

MR. G. HALE HARRISON: It controls them.

A MEMBER: Mr. President, I would like an answer in regard to the peach borer. Do you have any trouble with it?

MR. G. HALE HARRISON: Yes. We go over every tree in our orchard twice a year, dig a little place around the tree, about six to eight inches deep. The men get down on their hands and knees and scrape off the gum from the tree and then with a short wire pull the borers out, and let the space stay open two weeks. Then we take the sediment from the waste lime and sulphur and throw that around the trees. Any other questions?

A MEMBER: Which trees do you cut out as fillers?

MR. G. HALE HARRISON: Very often the fillers pay a greater profit than the permanent trees, and in several orchards in the United States the permanent trees are being ruined on that account.

A MEMBER: Would you cut out all the fillers the same season?

MR. G. HALE HARRISON: No; it is ordinarily best to cut out half the fillers or one whole row, and then cut out the other portion later.

A MEMBER: Have you ever had any success in using the trunk protectors?

MR. G. HALE HARRISON: We tried them and the boys took them off this spring. I didn't examine them myself.

A MEMBER: Do you think it is a saving in the case of wormy trees or a benefit to the trees?

MR. G. HALE HARRISON: I don't know. I wasn't there.

SECRETARY THOMAS B. SYMONS: We might ask Mr. Fulton to explain the use of these protectors.

MR. S. H. FULTON: I might say these few words. We have put on several thousand of them in different orchards. In our place at Sleepy Creek we have 4,000 of them on. We put them on two years ago this coming spring, using a paste

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which was manufactured at that time. We had fire pots made and kept the fires going, and found that afterwards they cracked, and the borers got down in there, and we thought that was the reason they didn't work so well. This last year we made a new sort of paste, and they told us the reason we didn't get better results was because the paste wasn't just right and we didn't get them on until a little bit late.

A MEMBER: When do the borers operate?

MR. S. H. FULTON: The moth that deposits the egg begins depositing in my section about the middle of July.

MR. HARTZHORN: You have to put these protectors on before it begins, don't you?

MR. S. H. FULTON: Yes. The egg-laying period, as I understand it, is over several weeks, and it should be in advance of that time. We put them on, and last year we made an examination in parts of the orchard, and we found an average of about seven borers when we used them and about six where we didn't use them, but, of course, that difference was not enough to amount to anything in a practical way, so we put them on earlier this past season, and a year from now we may have something different to report. We spread the paste on with a paddle, but we have something to learn yet about this borer trouble.

MR. G. HALE HARRISON: It wasn't worth the trouble, was it?

MR. S. H. FULTON: No, not under those conditions.

MR. G. HALE HARRISON: I have one more question here. "Should young trees be planted in a bearing orchard to take the place of any that have been taken out?" Replanting should be attended to every year up to, say, twelve or fifteen years. That is the general custom. If you are losing too many trees it is better to look around and see what is the trouble. Probably disease or improper cultural conditions are evident. It hardly pays to plant peaches unless in the first two years.

PRESIDENT ISAAC H. MOSS: The next question: "Do you consider a 'bag of fertilizer and a mowing machine' sufficient to produce a good crop of apples?"

"What is the objection to growing crimson clover as an orchard cover crop?"

"Why not grow cowpeas and soybeans for hog feed in your orchard?"

DISCUSSION.

Led by A. P. SNADER, New Windsor.

Fellow Fruit Growers:

The discussions have been so active or I have been so sluggish that on a few questions on these other subjects I didn't get the information I would have liked to have had. Since the time is passing, I hope to be active with this set.

"Do you consider a 'bag of fertilizer and a mowing machine' sufficient to produce a good crop of apples?"

I take it those two are very essential, but not sufficient. In the first place, cultivation in an orchard should cease not later than the first of August, and I think oftentimes the first of July is late enough, and by stopping cultivation, weeds will grow. The mowing machine then comes in, but we would rather not have to mow weeds, therefore, I think that they are not sufficient and that there should be a crop with the fertilizer that will do the ground more good than weeds.

SECRETARY THOMAS B. SYMONS: How about a mulching system?

MR. A. P. SNADER: The mulching system will work all right, but you can't get the kind of mulch that I would want with "fertilizer and a mowing machine" alone. To take up the second topic:

"What is the objection to growing crimson clover as an orchard cover crop?"

My objection to crimson clover is that it will grow up too close to the tree. It must come away before the winter sets in, and we often do not have time to do that. We had a piece of orchard, possibly about four acres, that we sowed crimson clover on, and we tried to get that clover out of the way so the mice wouldn't get in and destroy all those trees, which they will do unless it is removed from the trees. Another point about the crimson clover question.

We have been able to work our orchard every year, and work it well, with a sharp spring-tooth harrow, which we could not have done had it been planted to crimson clover. The disc will work all right on some soils, but it will not work in our slaty soil. We studied this question thoroughly, and we have substituted, and, I think, very profitably, too, the spring-tooth harrow.

The third topic: cowpeas. "Why not grow cowpeas and soybeans for hog feed in your orchard?" Our trees are headed low, the fruit hangs close to the ground, and we couldn't turn hogs in. They would spoil the orchard and the fruit. However, we sow cowpeas, and we sow them every year, one year after another, and remove very few of them. We take a few off for mule feed in fall, but we try to leave these cowpeas lay on the ground, mow them down about two weeks before the fruit gathering season, and leave them on the ground. Usually they sprout up a little green, but I challenge any one to show me a better surface for gathering fruit than when our cowpeas have been mowed down about two weeks. In the spring these cowpeas have decayed and the ground is loosened up, and we can go in with a spring-tooth harrow and work that ground up just as nicely as the year before. These decayed cowpeas are worked in the soil, and the soil is improving all the time. We sow them with a wheat drill and shut up every other hole. We sow them about the latter part of June.

A MEMBER: How do you get close up to the trees?

MR. A. P. SNADER: We get between the limbs as far as we can, usually five or six feet away from the trunk, but the shade of the tree keeps all the weeds from growing. We have sowed both ways when we have had time.

A MEMBER: Do you advocate sowing cowpeas both ways in an orchard or only one way?

MR. A. P. SNADER: We like both ways if it can be done. However, we alternate.

A MEMBER: Don't you get them too thick in the center of the block?

MR. A. P. SNADER: We don't sow them thick any time. We put a bushel to the acre. We usually sow the Clay and

the Whip-o-Will. They don't run much and they lay close to the ground. Clay hasn't given us any trouble at all. We mix them very often. The seasons sometimes have something to do with it. A little fertilizer will help them very much.

A MEMBER: Do you use fertilizer with your cowpeas?

MR. A. P. SNADER: Yes, sir.

A MEMBER: How do you like rye sown as a cover crop?

MR. A. P. SNADER: I wouldn't like rye for the reason that I don't like crimson clover. You have to turn it under. The cowpeas have a greater tendency to loosen up the ground.

A MEMBER: Do you use buckwheat?

MR. A P. SNADER: No, sir.

A MEMBER: Where do you generally get your cowpeas for seed?

MR. A. P. SNADER: We get them from Gates & Davis, at Pratt and Camden streets. They usually have them, although I suppose you could get them from any one else.

I would like to ask some of you growers about this system of working the orchard—whether you think a Barshare plow should go into an orchard. What do you think about it, Mr. Towson?

MR. A. L. TOWSON: I am not an apple man.

MR. A. P. SNADER: What do you think about the cultivation of an orchard?

A MEMBER: We have practiced both ways. We have been growing tomatoes and potatoes in our young orchards, then seeding crimson clover several years, and can't see but what we have been getting very satisfactory results. However, the greatest objection we had to crimson clover is that the fertilizing which we do for the truck crop and that resulting from the growth of the crimson clover produces too much of a vegetative growth. The blight has been very bad because of such a sappy growth.

MR. A. P. SNADER: I think that will hold good almost every time. We have an orchard of about sixty acres, now five years old, and we have been plowing up about a third of that orchard every year and putting in tomatoes, and changing around and sowing crimson clover in the tomatoes. Of course, we have turned that under every year, and we find a

tremendous rapid growth in the apple trees, and will soon have to stop that kind of procedure.

A MEMBER: I would like to say we have an orchard about twenty-five or thirty years old. We have been growing crimson clover on it for years and see no detriment to it because we really need more growth, more nitrogen. The trees are not growing enough, but on the other trees on our soil you will find that, after the successive use of crimson clover with phosphoric acid and nitrogen, you will get too much growth.

PRESIDENT ISAAC H. MOSS: Gentlemen, this has been a long session, and I am gratified to know that you have remained here. Professor Symons tells me this has been one of the best attended morning sessions in the history of the Society. I am sure it is gratifying to all. The talk here this morning has been interesting, and I hope that every member who is at this meeting will attend the afternoon and evening meetings, and not only that, but I hope that you will make up your minds to come here next year, every one of you, and do a little missionary work. We can soon make these meetings so interesting that farmers and fruit growers will make it a point to spend the week in Baltimore and get some good out of our meetings.

Now, gentlemen, there are three committees to name. The first is the Nominating Committee: Mr. George Morrison, Mr. C. P. Whiteford and Mr. S. L. Byrn.

Committee on Resolutions: A. P. Snader, S. P. Thomas and J. A. Cohill.

Auditing Committee: A. J. Hanson, Walter Harris and Dr. Augustus Stabler.

SECRETARY THOMAS B. SYMONS: I just want to make some announcements, gentlemen. The special demonstration with the graders will be conducted during the lunch hour. If any of you gentlemen are interested and want to stay for these demonstrations you will be able to get lunch upstairs.

We will convene promptly at two o'clock. Professor Kains will give an illustrated lecture on Pruning, and I hope that you will all attempt to be back here promptly.

WEDNESDAY, NOVEMBER 15th, at 2.30 P. M.

PRESIDENT ISAAC H. MOSS: Come to order, gentlemen.

SECRETARY THOMAS B. SYMONS: Mr. Chairman, before we start the meeting I would like to say that we have been able to make arrangements through the Bureau of Commercial Economics, in Washington, an international organization that has assembled a wonderful lot of educational moving-picture films for displaying them here during the week. The first one will be this evening on "Modern Horse Tractors, Showing Caterpillar Tractors and How the Farmer Can Use Them." These are specially prepared films and will be put on in the evenings as well as during the day. Tomorrow, for instance, there will be a film showing wheat from planting to consumption, taking the whole process of handling the wheat, making bread, etc., and they tell me it is a wonderful picture of that business, so we hope you will advertise the matter to all of your friends.

PRESIDENT ISAAC H. MOSS: Gentlemen, the meeting will be opened this afternoon with an address by M. G. Kains, of Port Washington, Long Island, on "Pruning Fruit Trees from Nursery to Bearing" (illustrated).

PRUNING FRUIT TREES FROM NURSERY TO BEARING.

By M. G. KAINS, Long Island, N. Y.

Mr. Chairman, Ladies and Gentlemen:

The pictures that I have this afternoon will not go into a great deal of detail concerning the history of any one tree, They will show specific points to be remembered in pruning. I think all fruit growers are agreed that fruit trees, as received from the nursery, must have their roots pruned back somewhat so as to get rid of injured roots. The larger quantity of root we can save, the better, but we can't nowadays get these trees without having them injured because of the way the nurserymen, most of them, at any rate, dig their trees. They have large knives that cut underneath the nursery rows and tear the roots off, so that we get jagged and injured roots. It is necessary, therefore, not only to cut

back the roots, but also the tops, in order to reestablish a balance between top and root. All fruit growers know the importance of this sort of pruning, the pruning of the roots just before and that of the tops just after the trees are put out in the orchard. What I want to point out is some of the errors to be avoided.

It is necessary in all pruning to remember, first, that the trees need light and air. They must, therefore, have as large a leaf surface as we can get without having too much leaf surface. There are several ways of having too much leaf surface. One is by overfeeding of the trees with nitrogen. This will produce a rank growth, which will be at odds with the production of fruit.

In this picture we are looking straight down on a little nursery tree. I want you particularly to notice that the leaves form a rosette.

The leaves are arranged so the light strikes every one of them. If I had a slide showing the tree vertically as it stands, and we were looking at it from the side, we would see those leaves stretched out over a space of about fifteen inches. Notice here, also, that at this point there is a gap, and there is another slight gap here. Otherwise, the leaves form practically a complete circle. Those two gaps are caused by two other trees standing in the nursery row, thus showing that the tree will take advantage of its opportunity to get light. It didn't have any opportunity at those two gaps; in other words, it had competition so it has developed in other parts of its circle. Now, what is true of a little seedling like that is also true in the upper part of the tree as the tree grows older, so we may prune our trees to get the maximum light or to reduce the amount of light, as we choose.

Slide No. 2. From your right to left you will see parts of the same limb. This happens to be an oak tree, but it follows just the same with a great number of our trees—apples, pears, cherries, etc. The limb at the right shows the compact growth before any checking or splitting of the bark has occurred. The one at your left shows an older part of the same limb where the checking has occurred. This accounts for the ridging on trees. Of course, you know that buttonwoods, or

sycamores, drop their bark, and many of the birches peel in a similar way, but apples and pears we have a splitting of the bark just the same as in oaks. This splitting is the natural way in which a tree provides for its growth in girth.

Often we find a special application of this, more especially in the earlier writing on horticulture, where trees are said to be "bark-bound." The older horticulturists offset that bark-binding by running a knife blade down the trunk or the main limbs, so as to reduce the constriction. In a week or so the little slit, which is just the width of the knife blade, will have spread apart a quarter or half an inch because of the pressure from beneath. This splitting of the trees to reduce the pressure of bark-binding is just the same as in nature. Unless we overdo it, there is no harm that we will likely have come to our trees on this account. Bark-binding is not common where the trees are well cared for.

MR. S. H. FULTON: How about the Stringfellow system of pruning?

MR. M. G. KAINS: That was popular some years ago. I think the best resumé of this is in a Georgia bulletin, published about twelve or fourteen years ago. It gives a lot of pictures. You will find that there are places where the Stringfellow method has been said to give good results; other places where it has given bad results—all sorts of opinions. The method consists in cutting the roots back, in some cases pieces an inch to two inches long, and in other cases nothing excepting the main shaft of the root trunk, so that in the latter case the trees may be planted with a crowbar, the hole being punched in the ground, the tree shoven in, and the earth packed around it tight.

Some experiments were tried at Cornell about 1892 to 1896 or 1897. Some of the trees seemed to do well and others did not. That is the consensus of opinion all over the country. It seems to have been a more popular theory in the South, Texas more especially, where Mr. Stringfellow lived, than in any other part of the country, but for at least ten years I have seen no account of its being practiced to any extent.

MR. S. H. FULTON: I think there was an orchard in Washington County four or five years ago.

MR. M. G. KAINS: Does anybody know of another case where an orchard has been planted by the Stringfellow method?

MR. THOMPSON: My idea was that Mr. Miller planted some that way, but after he had butchered up a number of trees we stopped him on that. They were stubbed back very short after a modified Stringfellow system—about four or five inches long.

MR. S. H. FULTON: What was the result there?

MR. THOMPSON: About twenty per cent. of them died the first year. We only planted about a hundred trees that way.

A MEMBER: Were they planted in spring or fall?

MR. THOMPSON: Fall.

MR. M. G. KAINS: I have no special set talk, so if there are any questions along the line of pruning while we are waiting for the light I will be glad to hear them and, if I can, answer them.

DR. AUGUSTUS STABLER: I have heard the question raised in some parts of the country as to the number of limbs that should be left on a young tree when it first starts to grow, whether three or four are enough, or whether more should be left. Now, three or four are all right to leave on a young tree when it is first making its head, but I, personally, would like to leave five or six, or even seven. Suppose, after the tree gets fairly well started, a high windstorm comes along or you have a plague of the seventeen-year locust, or something else, that kills two or three of your limbs. If you have only two or three limbs, you have lost your tree, practically speaking, and you have got to start a new head, whereas, if you have five or more, you have lost one or two, but you still have enough to start a good head. The question is, how many do you want to leave?

MR. M. G. KAINS: I like to have a tree with four or five main limbs, and have those at least double the distance of my two hands apart. I have a picture that will show a tree of this kind, where there is a long distance between the limbs.

The advantage of that is that a strong crotch is formed, one not at all likely to break down. If limbs come close together, as several of my pictures show, there is a leverage of one limb again another, so that down will go the tree if a heavy crop or an icestorm of any severity comes along.

DR. AUGUSTUS STABLER: You mean two hands between each two limbs?

MR. M. G. KAINS: Yes. It's not easy to get, but I try to get it even with peaches.

A MEMBER: What has been your experience with summer pruning?

MR. M. G. KAINS: I don't like to make any statement because summer pruning is likely to be overdone. The pendulum seems to be swinging to the opposite extreme now. Some important experiments are being conducted at various experiment stations along this line. The best I know that have been reported so far are with peaches at the Tennessee Experiment Station, a bulletin entitled "Summer Pruning of the Peach." Farther south than that there seems to be a distinct advantage in pruning the peach immediately after the crop has been gathered, especially with the early varieties. The fruit buds set more liberally, and it is only a matter of thinning, either by pruning or by actually cutting off or removing the superfluous fruits, that we get a good crop the following year. I don't know of any experiments being tried with apples or pears. I have made no experiments along that line. I think you have had some, Mr. Cohill.

MR. J. A. COHILL: Yes. I just wondered whether in your traveling experience—

MR. M. G. KAINS: No, I think you are the only man I know of who has been trying this summer pruning of the apple.

MR. A. L. TOWSON: What is their object in Tennessee?

MR. M. G. KAINS: They are trying to arrive at a more uniform set of fruit, and to have it placed more closely to the main trunk than is the case in ordinary pruning.

MR. A. L. TOWSON: They don't get enough fruit?

MR. M. G. KAINS: I think that is it. You will see from the pictures in the bulletin that the trees pruned in early

summer, just after the fruit dropped, had abundance of fruit the following year, whereas those pruned late had very much less fruit.

MR. J. A. COHILL: We have been doing most of our pruning in January or in the late winter. It is pretty severe to work in the winter time, and it is very expensive. We don't have time enough to do it in the late spring. Would it be advisable to do any pruning between now and Christmas?

MR. M. G. KAINS: In your case, where you have eight hundred acres to look after, it is a case of "must." You must do it whenever you can.

MR. J. A. COHILL: Do you think there would be any injury?

MR. M. G. KAINS: I don't think so. You will find a large number of experiments reported in Professor Bailey's Pruning Book on that very thing, showing the time of year has a much less serious effect upon the tree than the positions and forms of the wounds, because wounds made at all seasons of the year healed over. I have slides which show some plants along this line. The wound should be made as close as possible to the limb that is left on the trunk, never with a shoulder or a stub.

MR. BRYAN: What is the best means of bringing apple trees into bearing which are making a great deal of wood growth each year, but what ought to be the blossom buds always set small and don't bloom—trees eight to ten years old.

MR. M. G. KAINS: I don't know that I quite got your question.

MR. BRYAN: Some method of pruning that will bring apple trees into bearing.

MR. M. G. KAINS: Is your soil rich in nitrogen?

MR. BRYAN: It is. I left it in sod. I don't fertilize or cultivate.

MR. M. G. KAINS: Have you tried putting on a crop of rye or some other crop that will take out a lot of the nitrogen?

MR. BRYAN: No, because the trees have grown so big—they are so close together.

MR. M. G. KAINS: What is your distance?

MR. BRYAN: Twenty feet apart, every other one a dwarf tree, and they are together now at nine years of age.

MR. M. G. KAINS: Well, if you try summer pruning, you will tend to make fruit buds. You will find some interesting information on summer pruning in the Virginia Station quarterly reports.

MR. BRYAN: Have you seen the half girdling of the main branches tried?

MR. M. G. KAINS: No, but Drinkard, of the Virginia Station, has been doing that. He thinks that slitting with one-half or one-inch strips—that is, up and down—is less injurious than girdling partly around.

A MEMBER: Would pruning the roots have any effect?

MR. M. G. KAINS: Yes, pruning the roots would tend to reduce the amount of crude food that would go up to the tree-top. Thus, in a sense, the top would be starved more or less. You might try that.

DR. AUGUSTUS STABLER: Would it be more advisable to take out every other tree? Don't you think he has them too close together?

MR. M. G. KAINS: Oh. yes; much too close.

MR. BRYAN: I would do that anyway, but that won't make them stop growing.

MR. M. G. KAINS: In order to avoid just such a condition as that, we are swinging to the opposite extreme, in the orchard that I am putting out on Long Island. I don't know of any orchard in which peaches are planted more than twenty feet part. We are planting ours twenty-five. That is too much, but we are going to see what it will do. We also have our apple trees at fifty feet apart. That is also too much, but we will see what it will do. We are going to have low heads and spread the trees out as much as possible by training and pruning.

A MEMBER: Will you use fillers?

MR. M. G. KAINS: Yes. This morning I was on my feet to say something on that, but the discussion went in a different direction. We are planting cherries, plums, dwarf pears and peaches as fillers between standard pears, apples and sweet cherries. Of course, the sweet and sour cherries are

all in one block and the apples have peaches between them. Twenty-five feet between trees, no matter what kind of trees they are.

MR. J. A. COHILL: Did you plant any pear trees as fillers?

MR. M. G. KAINS: The dwarf pears are planted as fillers between standard pear trees, not dwarf or standard pears with apples. They are both separate. Our conditions down there are somewhat different from yours, Mr. Cohill, because we are almost on the doorsteps of our customers. We are growing nothing but the very highest class fruit, the very choicest specimens only being sent to our customers—a personal trade. We can dispose of our culls and our seconds in a different way. None of our second-class fruit will go into the market or to our customers direct. It will be manufactured into various products.

A MEMBER: I would like to ask Mr. Bryan what varieties of apples he is over-growing so.

MR. BRYAN: Well, practically every variety—Staymans, Winesaps, Grimes.

A MEMBER: In our orchard we have found that such varieties as Black Twig and York, on certain pieces of rich land, will overgrow, and the Winesaps do not. I was going to make the suggestion that he might top-work them to some less vigorous variety.

MR. M. G. KAINS: I don't like the idea of top-working because, unless you have a worthless variety, you may be doing more harm than good. I like to work over worthless trees, but I think that people who plant orchards of say Northern Spy, intending to work the trees over, say, to Grimes Golden or King, will overstep the mark. I know of orchards in Western New York, some in New Hampshire, and in other parts of New England as well, where the men are down on top-working, and that applies not only to apples, but to other varieties of fruits as well.

Slide No. 3. Here is a wound. It shows how wounds heal. You will notice that in the center there is a piece of hard wood and that the younger wood is gradually healing over it. In *The Country Gentleman,* I think it was in a May issue, or perhaps it was June, you will find an article on the paint-

ing of wounds. This was brought forth by a bulletin of the New York State Experiment Station, on "Wound Painting." The bulletin practically denounces all painting of wounds. The writer in *The Country Gentleman* thinks that this is too sweeping, and he suggests the use of creosote, but limits its use to the heartwood. If the heartwood alone is painted with creosote and only a small amount of creosote is put on, then no damage will spread to the cambium layer and the young growing parts of the trunk. It is necessary that this be left intact in order to hasten the healing. In the old orchard, at the place where I am now, are some trees that were painted over. On one of these I noticed a well-painted wound, but, by catching hold through a little hole, I took off a shell of paint and wood about half an inch thick. Beneath this everything was rotten, there was even an excavation there.

I have a picture here that will show something like that, thus proving that wounds are a menace to the tree unless they heal over quickly. Creosote, in my estimation, is the best thing to apply, provided, of course, you don't get any of it on the cambium layer or the young growing tissues.

A MEMBER: You spoke of your people being down on top-working in Western New York. What do they think of this double working; that is, the working of one variety on the root, and then another variety in about a foot high?

MR. M. G. KAINS: That is merely a form of top-working that has long been practiced in the growing of certain kinds of pears which do not succeed well on the quince stock direct. One variety is grafted on the quince stock and another variety on the stalk. The same thing is being done with King and Grimes Golden. In a case of that kind I think, perhaps it is the only way in which we can get good bodies for our weak growing trees.

A MEMBER: If you were going to plant Grimes Golden, how would you have them come from the nursery?

MR. M. G. KAINS: I think I would have them come top-worked. Several nurserymen offer Grimes double worked.

Slide No. 4. I have a series of pictures which show the flowering habit. The quince flowers from buds produced last year, but growing this spring, and with the flower bud

at the tip of this year's growth. That is, in 1915, this limb ended the season with a dormant bud. In that dormant bud was the little stem of young growth and the flower bud. This is the normal way in which the quince produces. It is the only important northern fruit that does that.

Slide No. 5. The plums produce in clusters, as we see here, two and three in a cluster, and from buds that have wintered over. We can tell the buds by their being a little more plump than the leaf buds.

Slide No. 6. This is a Japanese plum, which we find has the same characteristics.

Slide No. 7. The sweet cherry is much the same, but the leaf buds come out at the same time as the flower buds. This will show the growth of flowers, principally at the base of last spring's growth. The piece at your left hand is a twig that didn't have any blossom buds.

Slide No. 8. The sour cherry produces in much the same way, but the growth of the flower buds is, as a rule, farther out on the twigs. This is the reason why the sour cherry keeps extending and extending, and getting far out with nothing in the center of the tree. Pruning will obviate that.

Slide No. 9. The peach normally produces its blossom buds in pairs with a leaf bud in between. That is on the outside of the tree.

Slide No. 10. On the inside we have a somewhat different arrangement. This specimen at your right shows one that has produced only a few buds, or the buds have dropped off on account of cold.

Slide No. 11. The next one shows some of the buds from the interior of the tree. Here you see there are three flower buds—three there and three here—the leaf bud being changed to a fruit bud. As far as my observation goes, this sort of thing occurs only in the interior of the tree.

Slide No. 12. The apple has a distinct method of growing its bud. The books say the buds are borne on spurs. They don't say anything about axillary buds or buds in the terminations of the twigs. But here you see there is a cluster of buds at the end of the shoot. There is one on a little spur. Here is one where a leaf bud has been. It will be a

spur next year. Here is a terminal one. The only safe thing, therefore, is to go to the tree for information.

Slide No. 13. Sometimes the spurs develop a long twig like that, and we have a terminal cluster of buds on the end of a new twig. And here is a fruit spur with a broken end there where an apple started last year, but was broken off.

Slide No. 14. A broken off end. A fruit spur. A cluster of buds. A broken end there with two fruit spurs on each side. Here is an apple that last year didn't mature on the fruit spur. In order to know just how to prune an apple tree, you must know how the tree produces its fruit. In the East the Jonathan apple produces its fruit mostly on spurs. Out in Colorado many of the fruits are borne in the axils of the leaves—at the angles of the leaves.

Slide No. 15. The pear and the apple have much the same method of producing their fruit. Many people who will go into an old orchard without knowing how to prune will prune off these ugly pieces. Those are the bearing parts of the tree, as every fruit grower knows. This specimen at your left shows a twig as it developed normally. Here is another one that has developed from a fruit spur. The fruit spur was headed that far, and then, perhaps, the tree was overpruned, and we have this long limb. These are comparatively young specimens where the fruit spur has developed a long growth like that. Here is a specimen where we have a normal growth of limb with plenty of fruit spurs on it.

Slide No. 16. One limb of an apple, a Rhode Island greening apple. Just look at the history of that little limb. Every one of those ugly places will tell its story of where it produced fruit from time to time. That is one of the surest ways of telling whether a tree is worth having or not.

Slide No. 17. How high shall a tree be headed? This happens to be a Norway maple in front of the house, I formerly lived in at State College, Pa. I have had this young man put his hand there to show that that limb ought to come off. It is so low it would soon interfere with people walking on the pavement.

Slide No. 18. The reason why the little limb just shown should come off is because we don't want to have a thing

like this. Here is an ordinary sized pocket knife. Judging by it you can see how large a wound was made on this Norway maple. It is over a foot across and fifteen or eighteen inches from top to bottom. The only reason why it was necessary to make that wound was because that limb was so low it was interfering with traffic on the street.

Slide No. 19. High heading has gone out. This young man is five feet, nine and a half inches tall. He is standing just on his toes, and there is his reach, next to the lowest limb. We don't have anything of that sort nowadays because we are running to the opposite extreme.

Slide No. 20. Two forms should always be avoided in trees. Here is one that is very bad because the limbs are too numerous. This happens to be a soft maple, but I have a picture of an apple tree just as much like a brush broom as that. The great disadvantage of this is that water will get in the angles between the limbs, cracks will form, and decay follow.

Slide No. 21. Here is a case, not so much of pruning as lack of it. The tree is not so badly started except that this has a wide crotch. A few minutes and a stake would have prevented that ugly-looking tree.

Slide No. 22. I referred a little while ago to having the trees with their limbs far apart. This is a peach tree with its head too near the ground. What I want to show is the distance between the limbs. That limb doesn't pull against this one directly. If opposite, it would, and we would have a weakness at the point between them. They are a little close, but I bring this out to show these three limbs' appearance.

Slide No. 23. There is an ugly arrangement of limbs. Several have been taken off here, one gone there, another gone in there somewhere—an ugly arrangment of limbs.

Slide No. 24. There is one that is pretty strong. Two limbs here, a little bit like a Y, not sufficient in any of these crotches to be of any moment.

Slide No. 25. There is a strong combination. Good limbs, fairly erect, and with the limbs coming off in the right directions.

Slide No. 26. A dehorned peach tree near Trenton, New Jersey. An old tree, but it seemed to be worth while saving because, while it was not in good health, it was an early variety. It was a good thing the owner thought to have it cut back. He has made a very successful job of it. The peach is, perhaps, the easiest tree to dehorn.

Slide No. 27. Dehorning can be carried to extremes. Look at that. That is a bad case. This happens to be in the orchard at the Pennsylvania State College. You see it has never recovered from the dehorning work.

Slide No. 28. Another bad case. Three Y-crotches. I just brought that slide to show you this protection. This is the very best protection for young trees, that I know, to keep rabbits and mice away from the trees. But if you don't have it sunk in the ground the mice may get underneath and if it isn't high enough the rabbits will reach over the top. I have some pictures, not with me today, showing how the mice got underneath one of these protectors and did damage. If the protectors are made so that they have a diameter of about nine inches you need not bother with your tree for ten years, and in most cases about two or three inches deep would be plenty. The height will depend on the depth of snow. Ours on Long Island are 24 inches high.

Slide No. 30. There is the worst Y-crotch, I think, I have that has not split. There are three Y's, you see.

Slide No. 31. Here is what happens to a Y-crotch. This happens to be a cross section of a wild cherry tree, I used it because I didn't want to cut down a good tree to get a specimen. This happened to be cut down, and I arrived in time to get the specimen and make these slices. This black spot shows were decay has set in through the Y-crotch. During the winter the leverage from ice split the limbs apart a little bit, decay begun about an eighth of an inch, and extended down like this. When I cut it those pieces were together. That sort of thing is what happens when we have Y's.

Slide No 32. Where we have the limbs close together, as in this Japanese plum tree, a weak species, we have a split like that. If we don't have that, we may try to prevent our

breaking down by some make-shift like this. (Slide 33.) You see, a wire turnbuckle has been put in here and a couple of pieces of wood to keep this Y from splitting.

Slide no. 34. A chain was put around this tree to prevent its splitting worse than it did. It has split all the way down here. I don't know whether it actually got down and was then pulled together by pulleys, but it probably did.

A MEMBER: Wouldn't a bolt be a better method?

MR. M. G. KAINS: Decidedly. That is one way to do it. Another way is by means of a chain.

Slide No 35. This limb was broken down in a storm after a chain had been put on. That is the correct way to put it on. There is a little dip in the chain here, but that is because it was early spring so the tree was bare, but when the fruit is on that chain was tight across here,

A MEMBER: I have heard it said that the Japanese twist two limbs together to prevent the splitting of a Y-crotch. What do you think of that method.

MR. M. G. KAINS: I am glad you brought that point up. I haven't been able to get a specimen that would show well on the screen that kind of way of taking care of a Y-crotch. There are two modifications of it. One is to take a limb from the right side of the Y and one from the left, wind them around and hold them with ropes until they have grown together. It is just the same as natural grafts in the woods. I knew a Norway maple and an American elm in each of which there is an arch like that. It is a very satisfactory way to prevent a Y from splitting, but the most satisfactory way is not to have any Y at all.

Slide No. 36. Every practical fruit grower knows this is not the way to cut off a limb, because if cut off that way it will decay to the bottom of the tree, and perhaps we will see daylight through it in this case. The trunk was weakened, and down came the limb on that side.

Slide No. 37: Or we may have this sort of thing. It may rot out and be made into a woodpecker's nest. When a limb rots down it has a history like that. There is decay going down through the heart wood of the tree. The heart wood is absolutely powerless to save itself. All the function that

it has is to hold the tree stiff against storms. If we weaken it, we must expect to have our trees go down. If we don't have a stub like that we may have one like this and think we have it healed over all right, but there is a decay right there.

Slide No. 38. This healed over and didn't have so much trouble. There is part of the wound we saw in the other case.

Slide No. 39. Here we have the history of the wound just shown. Also the history of a twig. On the outside here we have the bark. A limb formerly came out there. It became a stub; decayed back, and we gave as this history. There is the decay, other traces down here, and we have it at that little point there. The same thing occurs with this one.

Slide No. 40. That is the proper way to make wounds on trees, close to the trunk, so that in a short time the young growth will cover the wound completely. It is better to have it close like that than to have it with a shoulder, even half an inch.

Slide No. 41. Perfect healing. That shows what will happen when a wound is made properly. Where it heals like that, quickly, you need not fear any trouble.

Dr. Augustus Stabler: What is your technique for applying creosote to a small wound like that?

Mr. M. G. Kains: I would not use creosote at all on wounds smaller than two inches in diameter. On larger ones I would never have so much creosote on the brush that there would be a drip or a drop to spread. Have only a little on the brush. Creosote spreads very quickly.

Slide No. 42. This is not pruning. It is the wrong way to take off a limb. If taken off from above it is sure to split because of the leverage.

Slide No. 23. The way to do is to saw from beneath. You can see by the expression of this man's face that there is some effort to get that saw through.

Slide No. 44. Here is the knife that I showed you just now. It has blades that can be taken off or left on, just as you please. It is a blade made by the Nagel Re-blade Co., of Poughkeepsie, N. Y. The blade comes off as easily as that (illustrating). So far as I know, the fruit growers have not

taken to it yet, but it is a convenient thing to have. In case you brake a blade you can put in a new one. Those other knives in the picture are just ordinary pruning blades.

Slide No. 45. The knife, next to the shears, is the most important tool we have. Of course, the saw is more important than either, but there are several ways in which wounds should not be made. The correct way to make a wound in a small tree is that—about a quarter of an inch above the highest bud. There is one wrong way. Notice the long slope on that wound. That bud will dry out because this wound here is dry and we have to rely on the bud down there. There is another wrong way, with the bud at the top. It will kill back to this bud here.

Slide No. 46. Saws are of various kinds, as you see here. There is just one kind of saw on the market that everybody should avoid, and that is this one. It is an abomination that ought to be in the museum along with the thumb screw and the rack and various other torture apparatus of the Dark Ages. The upper blade will be cutting where you don't want it, and, if it doesn't cut the tree, it will be cutting you. This lower blade with the lumberman's tooth, is altogether too big for a saw of that weight. A saw of that style is a much easier thing to use for a large limb than this one, and it is more efficient than this size. My own preference for small limbs, say, up to perhaps two inches, is one of these two styles. I like a different handle. That happens to be a good saw, but the point is that at the ends the blade can be tilted in any angle, so that while we may be working with our saw frame erect the blade may be cutting on an angle of forty or fifty degrees. We can make a perfect cut with it. It is very thin, like a meat saw, so it makes a clean cut if the blade is sharp. One point I find difficulty about is that it often gets covered with a waxy deposit which has to be scraped or oiled off. This is an all iron saw, which is a very difficult one to handle in cold weather. I don't like it at all.

A MEMBER: I have some Yellow Transparent apples, the tops of which have all blighted. The bodies seem good. Would it do to top-graft them with some variety that doesn't

blight, like, perhaps, the Delicious or Stayman Winesap, which doesn't seem to blight?

MR. M. G. KAINS: The one thing you would have to look out for in a case of that kind would be to prevent any stock of the Yellow Transparent sending out shoots, because, if you get that blight in the trunk of your tree, it is good-bye tree. In other words, you are growing a comparatively strong variety on a weak body. That is not a good plan. I don't object to the other plan, growing a weak body on a strong stock.

A MEMBER: I have something here that has gotten me (exhibiting specimen). It is a King apple. It was full of fruit last year, three trees of it. This year they fruited well, and this thing starts near the bottom. And it has gone clear around. But what is it?

MR. M. G. KAINS: You had better ask Prof. Norton about that. He can probably give you its name and how to treat it.

PRESIDENT ISAAC H. MOSS: Mr. Towson will now open the discussion.

DISCUSSION.

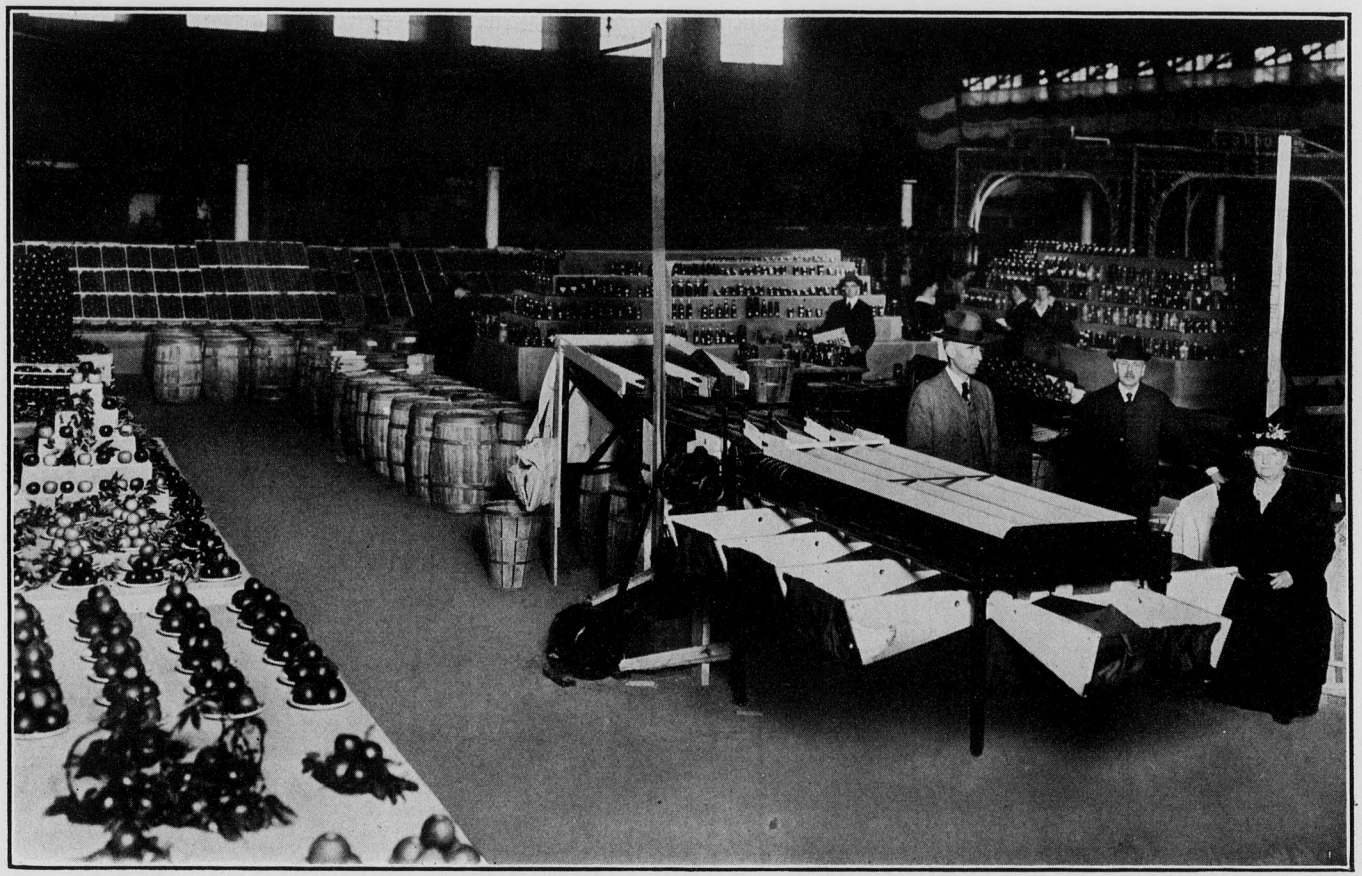
Led by Mr. A. L. Towson, Smithsburg, Md.

I really don't know anything about apple trees, Mr. President. I criticized these apple men this morning for not growing apples with more color. I don't think we can entirely avoid it, but I think we can do better than we did. My work is entirely with peaches, and I really don't know anything about apples. I could give some talk about pruning a peach tree if we had that on a slide, but you can hardly do anything with the peach tree without something to work on. To make a real intelligent talk on the peach tree you have got to have something to work on.

(At this point a lantern slide showing a peach tree was thrown on the screen.)

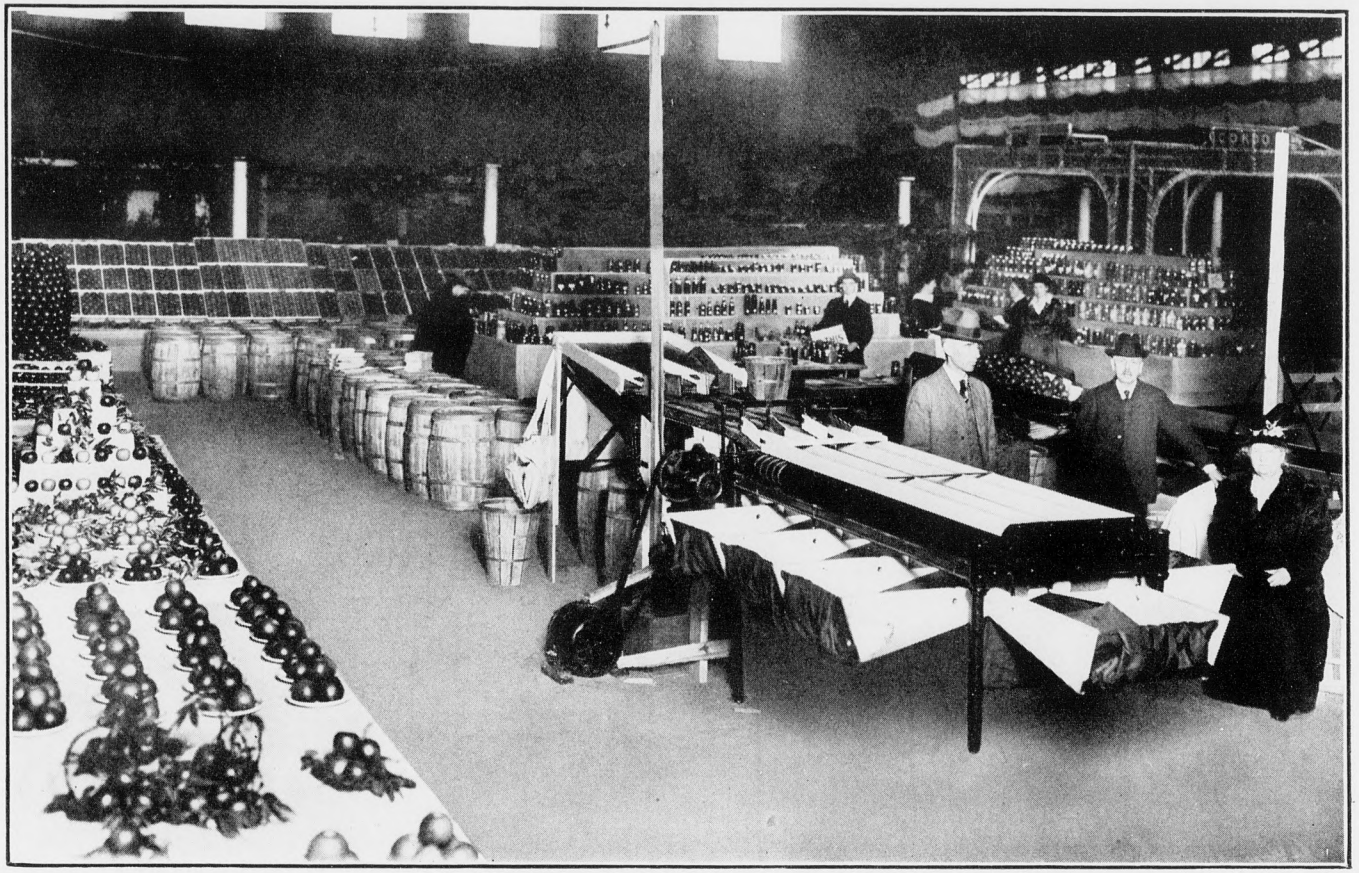
MR. A. L. TOWSON: But this is a general type of pruning. This has pruned itself here and in here. That might have been done by pruning shears, but it looks like it was done itself. But when we get young trees, say, up to two or three crops, we get pretty nice peaches. If they have open heads we are apt to get a pretty good color, but after they get to

be six, seven, eight or nine years old the peaches get to be small; then profits correspondingly get less, and we have got to do something there to try and increase the size of the peaches. I don't know of any better way than to give them a severe pruning. That is, not severe, either. The idea of pruning is like a while ago, this dehorning business, I don't think very much of. It was like Mr. Kains showed. In the first place, we would get an awful growth if you cut that limb any place along in here; you will get a fearful lot of growth up there; but my aim is, instead of having the fruit bear out here every year,—every year, you know, the fruit gets farther out, the limbs die in here, and sometimes it breaks the limbs down, but the way I work it, we try to keep these nearly full of fruit right in here where it will stay up. Great big peaches can grow in there. I have seen it where you could hardly see the bark for these peaches. In the first place, we keep a thoroughly open head. That gives the sunlight in here, and we keep this trimmed back year after year. Now, if you cut that off there this year,—there is a bud there and one there,—they will probably both come out,—there will be a branch there and one there,—well, I would cut that off and, if this has not made any growth at all, part of that would come off. After a while this would be full of short growth here. I don't like a limb like that at all. The peaches on the end of the limb would be small, whereas, if you cut it back here close to the main limbs where they get the food, there will be a large peach there, and there is another thing about it, that, if you let all that on there, we will probably have a heavy June drop. Those peaches there will be, probably, three times as large as the other peaches. But nobody wants small peaches. We used to be able to sell them. But you can't get anything for small peaches. Nobody wants them. Some years ago, when we started this, I left a row right straight across the orchard that we didn't prune, and, the fact of the business is, that when we started in we had a little difficulty to get the men to do this work. They didn't want to do it, and so I said,—one was particularly vociferous about saying he knew how to trim peach trees,—so we skipped a row, and I suggested to him, after



PART OF APPLE EXHIBIT AND GRADERS

we got through, that he show me how to prune that tree, that this was an experiment of mine. He had worked for a man ten or twelve years who had grown peaches, and he thought he knew the best way to prune peach trees, and he said he wouldn't do it, so we left that row unpruned. Well, there was such a marked difference in the peaches and in the trees that one of the professors of the Agricultural College came up there and picked those peaches from the unpruned trees, also from the pruned trees. The Professor was up there, and he said: "Towson, that looks all very well; there are large peaches on there, but you know there are four or five times as many peaches on the unpruned trees as on the pruned trees." "Well," I said, "it looks that way, but we are going to test it out." I said: "This thing is an expensive job; it costs from three to ten cents a tree to get over a big tree; you would really think you were not getting anywhere," but we wanted to see whether it paid or not. So he came up there and picked those peaches. I forget what variety he was on at the time, but they were ripe at the time, but anyway, those peaches on the unpruned trees sold in Baltimore markets for thirty-five cents a half bushel basket; on the pruned trees we got $1.75 for a carrier,—that is, two tiers, not three tier packs,—and that netted me about $1.05, about three times the net as to what the others sold for. And the funny thing about it was that he picked these, measured them and weighed them, from the different trees, the pruned and unpruned trees, and there wasn't five pounds difference. Now he took trees about what he thought were the same size; of course, you couldn't get at it exactly. I know, when we picked Salway in that orchard, Mr. Van Deman was there, and he said there was some variation, and Mr. Bryan and one of the navy admirals were there, came up just as we were picking these peaches, and I told them that we could show them some Salway over on the hill. I showed him some peaches, and he said: "Mr. Towson, what are they," and I said: "Salway." And he said: "Young man, I have picked more peaches than you ever saw, and they are not Salway." "Well," I said, "Mr. Van Deman, I don't know; we have always called them Salway, and have picked five or six



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we got through, that he show me how to prune that tree, that this was an experiment of mine. He had worked for a man ten or twelve years who had grown peaches, and he thought he knew the best way to prune peach trees, and he said he wouldn't do it, so we left that row unpruned. Well, there was such a marked difference in the peaches and in the trees that one of the professors of the Agricultural College came up there and picked those peaches from the unpruned trees, also from the pruned trees. The Professor was up there, and he said: "Towson, that looks all very well; there are large peaches on there, but you know there are four or five times as many peaches on the unpruned trees as on the pruned trees." "Well," I said, "it looks that way, but we are going to test it out." I said: "This thing is an expensive job; it costs from three to ten cents a tree to get over a big tree; you would really think you were not getting anywhere," but we wanted to see whether it paid or not. So he came up there and picked those peaches. I forget what variety he was on at the time, but they were ripe at the time, but anyway, those peaches on the unpruned trees sold in Baltimore markets for thirty-five cents a half bushel basket; on the pruned trees we got $1.75 for a carrier,—that is, two tiers, not three tier packs,—and that netted me about $1.05, about three times the net as to what the others sold for. And the funny thing about it was that he picked these, measured them and weighed them, from the different trees, the pruned and unpruned trees, and there wasn't five pounds difference. Now he took trees about what he thought were the same size; of course, you couldn't get at it exactly. I know, when we picked Salway in that orchard, Mr. Van Deman was there, and he said there was some variation, and Mr. Bryan and one of the navy admirals were there, came up just as we were picking these peaches, and I told them that we could show them some Salway over on the hill. I showed him some peaches, and he said: "Mr. Towson, what are they," and I said: "Salway." And he said: "Young man, I have picked more peaches than you ever saw, and they are not Salway." "Well," I said, "Mr. Van Deman, I don't know; we have always called them Salway, and have picked five or six

crops of them.'' Well, he said he never saw Salway like those. Then we came to the unpruned trees, and he said they were Salway right away. Now, as I say, as to the cost, it is a right slow job, and it costs, but it pays. It has paid me. Now, there is a disadvantage and one thing to be guarded against. In a vigorous tree you are liable to get those things too close,—that is, after the first year's cutting,—it forms so many peach buds. They talked this morning about summer pruning in Tennessee for peach buds. Well, with this pruning, you won't have to do any summer pruning for peach buds. The more you cut, the more peach buds you get, within certain regions. And after you trim that tree it looks awful until the leaves come out, but the peaches are there and they will fill the basket and bring you money. As I say, there is a liability of their getting too thick. If you cut off this main limb and make two, you have two intead of one. Now, if you don't cut that one off, even cut it back on there, you would have too many. There is such a marked difference in the size of the leaf. The leaves on the pruned trees were fully twice as large as those on the unpruned. I could see those trees from the main road looking up over the orchard. The first year we only pruned half the orchard, and I could see that a long distance. Over where we hadn't pruned it was a very much lighter shade, and the limbs and buds were very much larger. I don't know of anything else I can say along that line, except that we are going to continue that.

MR. J. A. COHILL: Mr. Towson, did you ever try that on apple trees?

MR. A. L. TOWSON: I would like some apple grower to try it. Did you ever try it?

MR. J. A. COHILL: No, sir.

MR. A. L. TOWSON: I talked to a grower from Oregon about it last year, and his ideas and mine were exactly the same. I had been a little fearful in this pruning of cutting the tops too much. The sap runs out to the ends of the limbs, and he assured me, and it is certainly common sense, that by cutting all along this limb, that we induced a growth there, and there would not be any danger then cutting out to the end, that it would not force such a strong growth.

You know our old way of trimming peach trees was to pull down on that string if it was a particularly long one, but we were pruning, you know, and what happened then? Just what we didn't want to do. It was worse than if left alone, because where we cut that off we induced more growth. You only cut it at that one point, whereas, if you trimmed it all along here, have these short spurs, it will cut into them as well as to the end. I am sorry that I didn't have a peach tree here.

PRESIDENT ISAAC H. MOSS: "What results have you had in the control of blight?"

"Has it paid to prune for this disease in the summer?"

DISCUSSION.

Led by ROLAND F. BOWER, Hagerstown.

Mr. President and Fellow Fruit Growers:

The question of blight is a very serious one—that is, in our section—and I am here more to get information than to give any. Last year we had a great deal of it in a young orchard five years old, consisting of about a thousand quince trees and 7,000 apple trees. In May we noticed on our Yellow Transparents we were getting a great deal of twig blight, and we immediately started to cut it out, being particular to cut low and using a corrosive sublimate preparation on all our cuts and on the tools after each cut. We were able to practically stop it on our apple trees, and we didn't have any trouble with the Yorks or Winesaps. It was principally on the Yellow Transparents and a few Grimes Golden. Is there anybody here who has ever raised any quinces?

MR. E. P. COHILL: I have.

MR. ROLAND F. BOWER: Can you tell me how to stop it on the quince tree?

MR. E. P. COHILL: Get down on your knees and cut it out. We tried it on 2,000 quince trees about fifteen years ago.

MR. ROLAND F. BOWER: Our trees started to blight the fourth year, and in the winter, when we are doing our dormant pruning, every tree is carefully inspected to see that

there are no cankers or old cases of blight left over, and all the cuttings are carefully gathered up and burned each time.

MR. J. A. COHILL: What do you use as a dip?

MR. ROLAND F. BOWER: Corrosive sublimate. We take an old piece of waste and put that on the cut and on the pruning tools.

MR. J. A. COHILL: Have you ever tried lime-sulphur?

MR. ROLAND F. BOWER: Yes, sir, but on the apple tree, where we make a cut low enough, you don't have any trouble with it spreading. We never have tried any spray preventive other than the regular sprayings.

A MEMBER: Do you find that the apple blight spreads except through the bloom.

MR. ROLAND F. BOWER: Yes, sir; it spreads all summer for us. This year we didn't plow at all, just left a heavy sod, and we only had three trees blighted in that orchard this year, and two of those were from old cankers we didn't get cut out on the Yellow Transparents.

MR. ROLAND F. BOWER: Mr. Fulton, have you had any experience in West Virginia with blight on the Transparent?

MR. S. H. FULTON: Not on Transparent, but particularly bad on the Wealthy. We were thinking some of top-working the Wealthy, the blight was so bad, but in talking with Prof. Waite, of the Department of Agriculture, he suggested that probably the blight will not trouble them much after this age. They are now about thirteen years old. We haven't had any success with summer pruning for the blight. It comes back just as bad. The plan we have adopted now is to let the blight go until winter time, and then cut it out in pruning.

MR. ROLAND F. BOWER: Mr. Cohill, do you think that the blossom blight, if left to go, will spread to the twig blight?

MR. E. P. COHILL: I believe it is carried by the bees and by the aphis and many other insects, and carried from the bloom to the wound, and then placed on the tree.

A MEMBER: I think that possibly the question of fertilization is an argument, we may reasonably well avoid unbalanced fertilization and pay more attention to the form of it. That is, cultivation and pruning gives you an excessive amount of nitrogen in relation to the mineral elements of

your fertilizer, and, at the same time, a slow-acting nitrogen, which keeps the twigs growing all summer and leaves them, not infrequently, so that they die back some. I know, in our experimental orchards at the Indiana Station, wherever we used too much clover and excessive fertilization, we always had twig blight, and, as we decreased that, the twig blight decreased. The trees were much less liable to it while we used a mercury sort of application of a slow-acting kind. Possibly coal oil may be equally good. I know the Barton orchards used that entirely and I believe that it was effective.

A MEMBER: I have worked some with blight in my own orchard, about twenty acres, and have observed the location in the orchards, and I haven't been able to find a single bit of evidence either for or against cultivation or fertilization. I have just had as many badly blighted trees in the finest soil in the orchard with bad cultivation as in the poor soil with good cultivation, and vice versa, and I have also tried coal oil, and the trees on which I used that continued to blight as if it were not used. The trees didn't blight the next year. The first blight I had was two years ago, last year some, and this year very little.

MR. ROLAND F. BOWER: Did you find that it paid to summer prune for the blight?

A MEMBER: It did not.

MR. ROLAND F. BOWER: Last year we lost about twenty-five hundred trees in West Virginia the same way, by not cutting them out.

MR. J. A. COHILL: Our experience has been that if you don't cut it out it keeps on getting worse.

MR. ROLAND F. BOWER: It never stopped on any trees that we let go. It continued on down the trunk. And on the quince trees we cut, and cut, and never did get ahead of it.

DR. AUGUSTUS STABLER: There is another solution for disinfecting the knife, which seems to be very cheap and efficient, and that is bluestone, just a very weak solution. It is one of the most efficient germicides that is known. I saw a statement from the Agricultural Department not long ago that one part of bluestone in two billion parts of water had an effect in preventing the growth of bacteria, that it is, perhaps, the

most active germicide known, and isn't nearly as poisonous as corrosive sublimate to men and animals.

MR. ROLAND F. BOWER: The reason I never used that is that you can put a few tablets of the corrosive sublimate in your pocket and drop one in a bucket of water, and you have your solution with no trouble.

A MEMBER: Some difficulty about getting bluestone at this time, too.

PROF. SEMPLE: All of the sterilizing solutions, I believe, are comparatively cheap. The difficulty is in applying them. There are two or three things here that I think need clearing up. So far as my experience goes, and I have been in most of the orchards of the State, one can well afford to cut the blight out of young trees up to about six years of age; after that he has to use judgment as to whether it will pay him or not to cut out the blight, and I could cite numerous cases where various methods have been applied. In summing them all up, I have decided that summer cutting on old trees and medium-sized trees is probably a waste of time. I think one would do better if he would go through and snip off with his fingers, or with shears, the tender water shoots down near the bottom of the tree. The blight cannot go through the bark unless there is a wound, but it can go through these tender water shoots, and those are the more important things to look after. At the Eastern Fruit Growers' Association meeting in Washington it was reported that one orchard in Delaware had lost ninety-five per cent. of its trees on account of blight in 1915. No blight had been cut out. This was a young orchard, about two or three years old. In regard to hold-over blight, I found this last spring in Mr. Sanger's orchard and then found it in other orchards. The hold-over blight was not on the larger twigs, or in the body of the cankered places, but in the tender water shoots that had been infected late the fall before, and if you will go into your orchards at this time of year you will find twigs, in some cases, just blighted a month or so. Those twigs remain sappy and have a copperish color, and, if you skin the bark off, you will find the organism is there. Next spring, just as soon as the sap begins to flow, these germs ooze out through

the bark. I would like to hear Mr. Sanger's experience on cutting out blight.

MR. W. E. SANGER: I have had two years' experience, and I have not yet come to any conclusion as to whether it pays or not. I am like Mr. Bower—I am very sure that we saved a large percentage of our Jonathan trees in 1915 by cutting it out. On other varieties, I question whether there is any real benefit in cutting it out. In some cases, on Jonathan, and also on the York, there were places where the infected sap ran down three feet. And there were cases where the infection on the young Grimes wasn't very general, but it would run down the limb and kill a whole limb just from one or two infections.

DR. AUGUSTUS STABLER: Do you have collar blight on Grimes?

MR. W. E. SANGER: Yes, sir.

DR. AUGUSTUS STABLER: Is Grimes the only variety that has it?

MR. W. E. SANGER: No, sir; we had some other varieties that had collar blight, about six or seven-year-old trees.

DR. AUGUSTUS STABLER: You were cultivating and fertilizing that orchard?

MR. W. E. SANGER: Yes, sir; most everybody pronounced it too vigorous, too sappy, too woody, too much brush.

A MEMBER: Mr. Chairman, I don't know whether I can give you any information, but when any one talks about blight it is pretty hard for me to keep still, because I feel it is one of the most important subjects that we apple growers have to face. Summer pruning has paid in our section of the country for years. It has been a fight and a contention until many of our trees are crippled and deformed, and scarcely any of the bearers left.

PRESIDENT ISAAC H. MOSS: Gentlemen, these discussions are very interesting and instructive to all of you, but we have a long programme on hand this afternoon, and we would like to get through with it. It is after four o'clock now. The next question is: "What varieties of peach do you consider most profitable for our section?" Mr. Fulton W. Allen, of Salisbury, Maryland, is to speak on this subject.

DISCUSSION.

Led by FULTON W. ALLEN, Salisbury.

Mr. Chairman, Ladies and Gentlemen:

The subject assigned here for this discussion is: "What varieties do you consider profitable for our section?" "Our section," I am going to interpret to mean my section, because I don't know what varieties would be profitable in the mountains. I am from the Eastern Shore, and from the sandiest of the sandiest soils of the Eastern Shore. I don't know anything about the conditions in clay soils. I have observed a few conditions in sandy soil. As to what peach would be the most profitable, I suppose everybody would tell you Elberta.

A MEMBER: No.

MR. FULTON W. ALLEN: Well, what peach do you think?

A MEMBER: With us it is the Champion.

MR. FULTON W. ALLEN: There is, no doubt, quite an amount of contention as to what variety is the most profitable. I believe that we might want a succession of varieties. Now, by a succession of varieties, I mean we don't want two varieties piled up right on one another at the same season. Just as sure as we have that, one is going to get neglected and the other is going to have a better chance to show what it will do. Of course, if we are able to handle it, all right, but the best is better than the second best, and if there is a best variety for a season, let's have the best. There is no question about it, the markets favor the yellow peach, so far as my observation goes. I am not so sure that, for the same acreage, one would not get as much money out of the white peach. The white peach, at least there are a number of white peaches which give us a better crop, a very much better crop than any yellow peach we have ever had, and, while we might not get as much money per carrier out of the white peaches, we get a so much greater crop of good peaches that it will more than pay for the difference, according to the acreage. Now, whether it will pay for the difference according to the labor invested is yet an open question. For a single crop variety, we like Champion, but for a suc-

cession we should consider what our markets want. I would suggest that a good succession for our particular conditions might consist of Mayflower, Red Bird, Greensboro and Carman. Greensboro will usually give you a good crop of peaches, and, in my opinion, it is the best early peach we can get. Carman, we have found, has done very well, and it has produced marketable crops almost every year that there have been any peaches at all.

Following Carman, we have Ray, which is a good sandy soil peach. I rather question whether Ray would be good for a heavy soil.

Next we have Belle of Georgia, which we have found to be a very good peach. I left out Champion, to come in directly after Carman. Champion is, perhaps, a good peach for a nearby market. Our experience has been that it didn't carry very well. The Belle of Georgia, coming after Ray, seems to be a very good peach for that season, and, in fact, we believe in it quite strongly.

Following the Belle of Georgia, there is a season we have been looking for something to fill in with. We have practically decided to use early Elbertas, which some claim to be identical with Slappy. Whether it is or not, I am not prepared to say. The Elberta season would come in after this. If there is a good market peach coming after Elberta, I don't know what it is. I would like to ask the opinion of some of those present.

MR. A. L. TOWSON: How about Hiley? Why don't you use it following the Belle of Georgia?

MR. FULTON W. ALLEN: Don't you think the Hiley is considerably earlier than the Belle of Georgia?

A MEMBER: It follows Carman with us.

MR. FULTON W. ALLEN: That is the impression that I have.

MR. A. L. TOWSON: We consider the Hiley a mighty fine peach.

DR. AUGUSTUS STABLER: How about Salway for a late one?

MR. FULTON W. ALLEN: I am not prepared to say which of these varieties is best and which is not.

MR. A. L. TOWSON: What do you plant to follow Elberta?

MR. FULTON W. ALLEN: We haven't planted anything, except a trial orchard that has not shown us anything that would be worth while after Elberta. We have Crumble's October, which is very late, and we have Francis, both of which are good peaches, but you hardly get enough of them to pay for the cost of production.

DR. AUGUSTUS STABLER: Have you tried Heath Cling?

MR. FULTON W. ALLEN: Heath Cling might give you a crop, but is that usually considered a market peach for distant shipment?

DR. AUGUSTUS STABLER: A very popular peach on the Washington market and a good peach, I think for distant shipment.

MR. FULTON W. ALLEN: It hasn't any standing in New York, Boston or Philadelphia, has it?

MR. A. L. TOWSON: I don't believe you could grow those peaches very successfully. Have you ever tried Matthew's Beauty?

MR. FULTON W. ALLEN: No, we have not.

A MEMBER: This summer we had some Chair's Choice trees, ten years of age, and we had only about one twenty-fifth of a crop.

MR. A. L. TOWSON: The trouble with the Chair's Choice peach is it isn't pruned right. I can put as many fruits on the Chair's Choice as it will stand. They are a Crawford type, but it will develop just as many peaches on as can stick on, and they will hold.

DR. AUGUSTUS STABLER: I would like to inquire why the Heath Cling would not do on the Eastern Shore. Is it soil or climate?

MR. A. L. TOWSON: It is very subject to the black spot. You don't grow Salway, do you?

MR. FULTON W. ALLEN: No. we don't. I would like to ask if some one could suggest a good shipping peach to take the Champion's season. We have been looking for a peach to fit in there. The Champion does not suit us.

MR. A. L. TOWSON: How near does that come to Hiley?

MR. FULTON W. ALLEN: I don't know. We haven't any Hiley on the place.

A MEMBER: What is your objection to the Champion?

MR. FULTON W. ALLEN: We find that it doesn't carry as other varieties do to market. Our experience has shown us that other white varieties are just as sure of a crop as Champion and that they will carry to the market better.

PRESIDENT ISAAC H. MOSS: Mr. Sloan is here, and I would like to ask Mr. Sloan to tell the meeting what advantage he has gained by keeping a cost record of his orchard. That is a question you are all interested in. Mr. Fred R. Sloan, of Lonaconing, Maryland, will tell you all about keeping a cost record of your orchard.

DISCUSSION.

Led by FRED R. SLOAN, Lonaconing, Md.

Mr. President, Ladies and Gentlemen:

I have been in the orchard business about six years, and if I knew when I started out what I know now I think I would be better off today. I discovered I was using up considerable money in trying to grow an orchard without practicing some system of intercropping on that orchard land to pay the expenses. I kept quite an accurate record and concluded I had better get busy. Our farm is six years old, and this is the first year of intercropping, you may say, which totaled up about ten per cent. on our investment this year. As to the accurate cost of growing an orchard, it is utterly impossible for me to furnish complete data, because my men are working from field to orchard, and I am not there at all times to keep a record of the time used in orchard work, but at the end of the year the total expense of orchard work and the returns from the crops gives us an idea of the financial situation. It shows a nice income for this year, and I think that within the next three or four years the orchard will show me a clear profit on the first barrel that is shipped. I figure, at the end of the next four years, if I can go on as I have this year, the orchard won't cost me a nickel. My farm crops will pay me for the orchard. Some people are in the orchard business exclusively who have had some returns, and they would be glad to tell you just what

the record is of a bearing orchard. Mr. Cohill, you have had some experience. Let's hear from you.

MR. E. P. COHILL: The total cost—overhead charges, office charges, spraying and cultivation, everything complete—we figured about $1.56 a barrel on the cars, actual cost. The total expense from the first of January, 1915, to January 1, 1916, was a little over three thousand dollars.

A MEMBER: Have you any idea of the cost of running the orchard?

MR. E. P. COHILL: I kept the cost, year after year, of thirty acres, every dollar that was spent on it, including the cost of the land and the trees, for about ten or twelve years, but I don't remember just what it was.

A MEMBER: If the cost this year was $1.56 on the basis of a 40,000-barrel crop—suppose it was on the basis of a 20,000-barrel crop—what would it be then?

MR. E. P. COHILL: Last year we had a 27,000-barrel crop, and it cost us about $1.45.

MR. FRED R. SLOAN: Mr. Wertz, what has been your experience?

MR. WERTZ: I am ashamed to say that I have never made an accurate account. I am growing some young orchards in connection with a bearing orchard. The only thing I can do is to strike a balance at the end of the year. Some years it would show on the right side of the ledger, and some years on the wrong side of the ledger, depending on whether I had a crop, how large a crop, and how good the prices were. I am ashamed to say, if any one asked me how much it cost to grow a barrel of apples, that I couldn't answer the question.

MR. FRED R. SLOAN: Has any one else any information along that line?

A MEMBER: Three years ago this coming fall, I set out thirteen acres of young apple trees. The first year I planted an intercrop of cantaloupes, cantaloupes that cleared a little over sixty dollars an acre, after deducting cost of fertilizing, growing, harvesting and shipping. Last year, little over twenty dollars an acre. Thirty-three dollars an acre this year over all expenses. I have no apples, but I am getting money just the same. The trees are going on.

PRESIDENT ISAAC H. MOSS: We desired to have the reports of the county vice-presidents and State Horticultural Department, but the meeting has kept up so long we will have to postpone them. The meeting will be called to order promptly at eight o'clock, gentlemen. Gentlemen, we will adjourn to meet at eight o'clock.

REPORT OF COUNTY VICE-PRESIDENTS

CAROLINE COUNTY.

Report of

J. SPENCER LAPHAM, Goldsboro.

Caroline County in 1916 was prosperous. Asparagus, the first crop, is grown only in a moderate way. It sold for steady and high prices.

Peas did well, and the canneries with their outlying vine plants did a larger business. A good many peas were shipped and bushel hampers sold at $2.00 to $3.00 each. The same was true of the late peas. The Telephone variety was unusually large and fine, and some of these possibly brought more than three dollars.

There was a good crop of strawberries. The cannery plant of Armour & Co., at Ridgley, took large quantities and the market price was good all the way through. The Chesapeake, as usual, brought highest prices. The Gandy seems to be on the wane. There were no new varieties better than the old standards.

Raspberries are nearly a thing of the past in Caroline.

There was a good crop of cherries—Early Richmond and Montmorency.

Blackberries and dewberries were a light crop; acreage growing smaller every year.

Early apples were nearly a failure on account of the blossom blight. There were some good lots, however, of Astrachan and Williams and these sold well. Late apples were nearly a crop failure.

There are only a few peach orchards left in Caroline. One orchard at Ridgely had a light crop. Peaches sold well in 1916.

The crop of cantaloupes in the district and around Federalsburg was good and sold fairly well. In the upper part of the county the vines were destroyed by blight.

Tomatoes were the surprise of the year. The crop was irregular and the price also. Ranging from 16 cents to $1.00 a basket for the late or cannery crop. Thousands of baskets brought 25 cents to 50 cents each on the railroad sidings.

And now (December, 1916) almost anything the farmer has will bring high prices.

Turnips are $1.00 a bushel; parsnips and carrots, $1.25.

Cabbage, $100 a ton, and potatoes, $1.50 to $2.00 a bushel.

Everything the farmer has seems to be going up in price and the taxes are following closely the tendency to rise.

CARROLL COUNTY.

Report of

A. P. SNADER, New Windsor.

The year nineteen hundred and sixteen proved to be fully up to the average, all crops considered.

The apple crop was perhaps above the average, both in quantity and quality, the peach and tomato crops were both short, but prices were good, so even with a short crop, they proved to be profitable.

Carroll County had a good hay, corn and wheat crop this past season, which brought such prosperity to our farmers that perhaps they have never before experienced. If our farmers were as enthusiastic over being expert, scientific farmers as they are over possessing an automobile they would go a great way toward feeding the world with their bounteous crops. Carroll County has the soil, but we need a demonstration station to convince our farmers what can be produced under favorable conditions.

DORCHESTER COUNTY.

Report of

WILLIAM W. BYRN, Cambridge

Apples are not grown in a commercial way to any extent in this County, very few orchards being planted except for

home use, and these are badly neglected and suffer severely from the effects of the twig and blossom blight, which has not been successfully controlled here. This year's crop was a failure and not sufficient for home needs.

Peaches were only a partial crop; perhaps 50% of an average one but prices were good and those who were fortunate enough to have a crop realized good prices for them.

Pears: Very few pears are grown except kieffers and these failed to bear their usual heavy crop, not more than 20% of the usual crop being harvested.

Strawberries yielded their usual crop but prices were not as good as we had hoped they would be.

Blackberries, raspberries, cherries, damsons, plums and apricots are only grown for home use and yielded scarcely sufficient for that purpose.

Asparagus is an important crop in this section of the county, and yielded abundantly, but the asparagus beetles were so numerous as almost to destroy the crop in some sections, or damage it to such an extent as to make it unsalable a part of the season.

While potatoes both early and late were only moderate crops, prices have ruled high. No large areas of these are planted here.

Sweet potatoes are more largely grown and the crop was good and prices have been good.

Tomatoes are grown here to a larger extent than in any county in the state. It is the principal money crop of almost every farmer of the county, and more tomatoes are packed here than in any county in the United States. The acreage planted this year was larger than usual and the plants started off nicely, but heavy rains severely damaged them in mid-season so that only about 40% of a crop was picked. Many of these recovered later in the season, the vines taking second growth, and at this time, November 6th, the canning houses are still running on a limited supply of fruit.

Peas for early market are grown here to quite an extent, Some twenty or twenty-five solid cars being shipped from this point (Cambridge). The crop was good in quality and the yield above the average with prices high and they proved a very profitable crop.

Lima beans for late market are also extensively grown, this year's crop being good and prices very satisfactory.

Corn has produced about an average crop, with prices the highest for many years.

Wheat produced an average crop, but the price at harvest time was around one dollar a bushel; a large majority sold at that price and so failed to get the benefit of the present high price.

Hay. The crop of hay harvested in this county was probably the largest ever grown, scarlet clover, red clover and timothy all producing bumper crops and were put in the barns in fine condition.

FREDERICK COUNTY

Report of
R. Rush Lewis, Frederick

Another year is a matter of history. Can I say good?—Yes! But not best. Prices rather than production placed it above the average year.

The wheat yield was below the average and corn about an average. The hay crop was very good, but the weather conditions were such that the great bulk is of poor quality. The potato crop was exceptionally short.

The apple yield was the best Frederick County has had for years. There were very few peaches,—large sections not having any. Pears were injured by blight. Raspberries were fairly good. Strawberries were in abundance, but the rains destroyed them. I trust it may be my privilege as well as pleasure to make a better report next year.

HOWARD COUNTY.

Report of
W. S. Powell, Ellicott City.

The present year can be classed as a half and half year for the fruit, truck and staple farm product growers of Howard County, because without either quantity or quality,

hay and corn excepted, they are winding up the cropping season with full pocketbooks, and are cheerfully singing the part of the doxology which says, "Praise God from whom all blessings flow."

Cherries—The cherries set well and those that were carefully sprayed opened up nicely and brought good prices. The cherries which were not sprayed were of poor quality, rotted quickly and badly.

Strawberries—Late but of good quality; small yield, but sold well at top prices. More strawberries being grown each succeeding year.

Raspberries and blackberries follow with a like report, but the wild raspberries and blackberries were very small, of bad color and unusually sour.

Cantaloupes—Poor crop and poor in flavor, but brought good prices as they followed the Anne Arundel County melons in the near markets.

Watermelons—Small crop, but of very fine flavor. All vines were quickly attacked by scientifically named bugs and beetles, who easily and successfully "put one over" on the scientific bug killers.

Peaches—Excepting the Carman (of poor quality and small in quantity), paid well and the trees are looking healthy. The Carman, although producing a fair yield of sound fruit, was much below the usual size.

Pears—Poor and small crop. All trees, including the Seckel, being badly blighted.

Plums—Small crop, excepting the Lombard, which lived up to its reputation of being a regular producer and a money-maker.

Quince—A big crop, but fruit off shape and color.

Grapes—A big crop, but very poor, and for some reason when about ripe the berries dropped badly as soon as the stems were touched.

Apples—Small crop, but dropped too quickly and spraying was generally omitted owing to high price of spraying materials. This omission proved a costly mistake.

Potatoes—Small yield, but fair quality. Every variety this year changed its name to "money-maker."

Wheat—Good, average crop; trouble in saving owing to wet weather at harvest time.

Hay—Large crop, but weedy.

Alfalfa—Extending, but as yet not an established success with us.

Corn—In quantity and quality the best crop we have had for years.

Our real wants are a greater sub-division of our farms into smaller tracts and labor of a good class to carry out the details now required for successful farming, whether this farming be of fruit, truck or what is known as staples.

KENT COUNTY.

Report of

W. B. HARRIS, Worton

Fruit crops were generally short this year in Kent County.

Prices were fair but crop too short to make fruit-growing profitable.

Apple and pear orchards suffered badly from blight; in some cases whole pear orchards were wiped out. I do not know of any new orchards being planted at present.

Tomato crop fair. Potato crop short. Small fruits little grown at present.

SOMERSET COUNTY.

Report of

F. E. MATTHEWS, Pocomoke City

I herewith hand in my report for the County of Somerset for year of 1916.

Our first maturing crop, the strawberry, was a full one, no late frost to kill the bloom but the weather was so excessively wet during the ripening period that the old standbys like Hoffman, Gandy and several other standard varieties were much injured by the almost daily rainfall. This season demonstrated fully that no strawberry, however solid its texture, will stand continuous soaking after it ripens. Notwithstanding unfavorable weather conditions, this crop

brought considerable money into the county as the volume of business was very large.

The early Irish potato crop was nearly, if not quite, a full one. This was a surprise to many as most of our growers were very apprehensive of results in planting the potato this season as the absence of potash in fertilizer seemed to render favorable results doubtful to say the least, but to the surprise of most growers the crop came along nicely from start to finish, in fact, I do not think we ever grew a finer crop. It is true the weather conditions were ideal, plenty of rain and sunshine, with cool damp nights. The fertilizer formula that gave best results was 7-8-0 as the small quantity of potash obtainable, 2% only, together with high prices demanded, made the use of this small quantity prohibitive, causing most of our growers to cut it out entirely and use the above formula which was entirely satisfactory this season at any rate. The net returns from this crop were very satisfactory and all growers made some money. The hay crop, with exception of crimson clover, was short and the wet weather caused serious damage to this crop, also wheat and hay which are grown quite extensively here. The wheat crop was good, many fields yielding from 30 to 35 bushels per acre of plump grains. Oats were fair, winter oats being grown quite largely. The corn crop while of excellent quality (no rotten corn) is very short, due mostly to the difficulty of getting a stand, as the very mild winter allowed a greater quantity of insects to come through than ever before known, causing almost continuous replanting, resulting in a very short crop.

The late potato just harvested is also short though tubers are fine and smooth, size not so large as usual owing mostly to early frosts which cut the vines at least two weeks before crop came to full maturity. The prices, however, are high, $1.25 to $1.50 f. o. b. This crop, if prices hold, will likely bring more money into this section of the Eastern Shore, perhaps than any crop ever brought before. The late grown Irish cobbler for seed purposes is by far the best ever grown here, as this variety had matured before the frosts came. This is a godsend to our growers. I believe we have enough seed to plant the usual acreage, perhaps more than enough,

and by the way this late grown seed of ours is the best obtainable in my judgment, being far ahead of Maine grown or any other Northern grown seed.

The peach crop was very short in this county, not enough for home consumption. The pear and apple crop was very poor, also. There was a wonderful amount of bloom but for some reason the fruit did not set, due chiefly to a long Easterly spell at blooming time. We are getting fair prices, however, Kieffer, 60c. per hamper and apples, $3.50 to $4.00 per barrel.

I believe this about covers most of our commercial crops. The cowpeas and soy beans are getting to be grown more extensively every year, both for hay and seed, and soon bid fair to assume the importance of commercial crops also. Alfalfa is also coming to the front here, several hundred acres having been seeded this year. Our County Agent, Mr. H. S. Lippincott, is chiefly responsible for the increase in acreage of these crops just mentioned. Another instance of the value of County Agents is the very marked decrease of hog cholera and spinal meningitis in horses. Our agent has made a very strenuous campaign in the use of cholera serum and enforcement of sanitary measures, and has no doubt saved the farmers here thousands of dollars thereby.

ST. MARY'S COUNTY.

Report of

G. F. WATHEN, JR., Loveville

The year 1916 was an unusually prosperous one for St. Mary's. The unprecedented prices for our money crop, tobacco, has put new life into all other lines of Agriculture and has overcome the effect of the severe drought in some sections of the county. Our people are planning many improvements, especially along the line of Horticulture, as all general farmers are anxious to enjoy the luxuries of the orchard and garden, and with the increased means at hand to buy spray materials and outfits, I find there will be many more orchards sprayed and pruned this season than ever before.

Previous demonstration of the many advantages of spraying and the urgent necessity for it, have awakened new interest along all agricultural activities. With the practical application of these principles it is reasonably certain that St. Mary's homes will be well supplied with the choicest products of the orchard and garden; with increased transportation facilities there is ample market for any surplus that can be produced. I maintain a feeling of the highest satisfaction for 1916, and anticipate brighter prospects for St. Mary's in the future.

TALBOT COUNTY.

Report of

Wm. E. Sanger, Cordova

The crop of tree fruit in Talbot County in 1916 appears to have been very light. However, in some few orchards which have had careful attention in past years, in the way of approved, up-to-date methods of culture and spraying there was set and produced a fair crop of fruit of fine quality, and for which there exists a sharp local demand at good prices. Also several cars of very fine peaches were shipped to northern markets which sold for $3.50 to $4.00 per crate.

Judging from the small amount of fruit brought in to the local markets from the farms, and also from the demand from the farming community for both apples and peaches it would seem that the crop in the average farmer's home orchard was a failure.

These conditions which prevail with us this year indicate and emphasize to me as a fact, that the constant following out of the best practices in orcharding will go far in many seasons toward warding off failure of crop, and will bring a crop to such a grower when others fail, with consequent high prices. The fire blight in apples and pears did considerable damage again this season, but was not nearly so bad as in 1915; and owing to the dry weather in the latter half of the summer, new infections and further development of the blight almost ceased. So it is to be hoped that we have few hold-over cases of blight on our trees now.

Brown rot in peaches was very bad during the wet weather of early summer, causing loss of much foliage and some young fruit on some varieties, but at ripening time it was not present to any extent on sprayed trees.

BALTIMORE CITY.

Report of

GEORGE MORRISON, Carroll P. O.

The movement of florists' products during the past year, excels that of 1915 and on the whole was very satisfactory. The entire trade reported increased business both at Easter and Christmas. The question of labor has, however, been quite unsatisfactory. For this reason and in addition the increased cost of material, building operations have been prevented to any appreciable extent.

REPORT OF THE STATE HORTICULTURAL DEPARTMENT.

By T. B. SYMONS, College Park.

The past year has been a most successful one to the horticultural industry of the state. As a rule, good crops were produced and excellent prices secured. Many orchard undertakings started some years since, are beginning to produce a profit. The state is more and more becoming to be known for the excellence of its fruit and the quantity is steadily increasing. The results of continued education in the culture of fruit and truck crops is in evidence on all sides. There is, of course, much room for improvement in methods of treatment and culture as well as the control of insect pests and diseases, but commendable progress can be observed. The passage of the "Apple Grading and Packing Law" should serve a most useful purpose in not only educating our growers in better packing, but also establishing uniform grades for the state. While the law could not be enforced the past season on account of the delay in issuing regulations, it is hoped that all fruit from commercial orchards will be packed in accordance with the provisions of the law, another season.

The past year has not been marked by any outbreak of insect pest or disease. Our annual pests continue to extort their annual toll, but this is being gradually reduced. Injury from fire blight was greatly reduced the past season. The regular inspection and the work of the department has been conducted as heretofore.

Nursery Inspection.

As required by law—nurseries have been inspected and sixty certificates issued during the year. The inspection work has been mainly conducted by Prof. Cory, Temple, Travers and others of the Department. The nurseries were found for the most part, in very good condition. In some cases a large amount of hold-over stock made necessary active steps for its immediate removal. Nursery men are realizing that in the great majority of cases it is unprofitable to keep stock over two years. This applies especially to apples. Peach stock, of course, being no good the second year. The Department has maintained an inspector at the large nurseries for most of the shipping season to aid in preventing the distribution of undesirable stock. No complaints have been received during the past year from Maryland stock. It is realized more and more that the nursery men and inspectors must exercise eternal vigilance to keep the stock and grounds free of various pests.

Inspection of Imported Stock.

The great importance of properly inspecting imported nursery stock shipped into the State from other countries is becoming more and more appreciated. When one stops to think of the possibilities of introducing new pests, by this means, which may become as injurious as those that have already gained a foothold, it is realized that every effort should be made to guard against such dangers. It is my belief that the nation will shortly absolutely prohibit the importation of all such stock and adopt the policy that other nations have adopted against the United States. A total of

287,209 imported plants and trees have been inspected during the past year. Several minor pests were found, but nothing of serious moment. No gypsy moth egg masses were detected the past season. The inspection of this stock is being prosecuted as thoroughly and promptly as possible. The serious development of the white pine blister rust in New England during the past year is an illustration of the serious injury that is always apparent from these pests. Fortunately as far as known this disease does not occur in Maryland.

Orchard Inspection.

Orchard inspection has been conducted where required. Some complaints of neglected orchards have been received and early inspections to remedy the conditions have been made. As heretofore our efforts have been expended mainly in demonstration work in spraying and culture as the best means of improving the orchards in any given section. With the active support of the county agents in all counties information should be forthcoming of the existence of neglected orchards affected by yellows, scale or other pests. The educational work of these agents supported by specialists should also greatly aid in raising the standard of orchards throughout the state.

Apiary Inspection.

A law providing for the promotion of beekeeping in the state through the inspection of apiaries was passed by the last legislature. No funds were provided but it has been arranged to devote a small allowance from the State Horticultural funds together from other sources which will enable some work to be done along this line during the coming summer.

It is believed that a trained beekeeper can be of much assistance to the beekeepers of the State by visiting them and giving instruction in up-to-date methods and the detection and control of disease. Efforts have been made for many years to secure this legislation and the hearty cooperation of the beekeepers in this new work is assured.

There are great possibilities for beekeeping in this state. We do not nearly produce the honey that is consumed. Aside from this it is felt that the fostering of this industry will mean much in the production of other crops.

Demonstration Work.

As stated heretofore demonstration work inaugurated in the department about twelve years ago has been continued. The holding of pruning, spraying and packing demonstrations throughout the state has proved to be of inestimable value in showing fruit growers the results of adopting up-to-date methods of treating orchards.

The demand for this work continues and with the cooperation of the county agents a greater field is covered. During the past year in cooperation with the specialists and agents of the Extension Service a total of 79 pruning demonstrations, and about thirty spraying demonstrations and 12 packing and grading demonstrations have been held, and a great number of orchards have been visited for the purpose of giving advice to growers. The conducting of special demonstrations for the control of brown rot has been continued. During the past year these demonstrations included the successful treatment of about 71,400 peach trees.

As an illustration the results of a demonstration for the control of brown rot in peaches conducted by Mr. Travers in the orchard of R. B. Homer, Pooles Island, Md., serve to emphasize the advantage of this character of work. The orchard consists of 8,000 peach trees about 12 years old. The trees had lost the three previous crops from Brown rot, viz., those of 1913-14 and 1915. The trees were thoroughly pruned and regular treatment of dormant spray of concentrated lime sulphur applied. About one third of the orchard did not set fruit. The orchard was sprayed four times with the self-boiled lime sulphur and arsenate of lead, the latter being omitted in the fourth treatment applied August 21st. A careful record of costs and receipts were kept with the following results:

Cost of spraying, including material, freight and labor $2,973.91
Number of baskets picked..... 17,393
Net profit on crop..... $6,921.82

Similar results were secured from other demonstrations. It is hoped to continue to emphasize this character of work. Professors S. B. Shaw, C. E. Temple and W. C. Travers have conducted the major part of this work.

In addition Professor Temple conducted some demonstration work in the control of blight on tomatoes. This was also in cooperation with the Extension Service. In one instance a plot of tomatoes that was sprayed four times with bordeaux mixture produced approximately 20% more tomatoes than the check or unsprayed plot near by.

Plans are under way for an extended line of work to be conducted in spraying tomatoes for the control of this disease during the coming year. Assistance has been rendered the Western Maryland potato growers by Professor Temple in their effort to produce seed potatoes. Specifications were prepared and inspection of fields conducted during the summer.

Disease resistance cabbage seed was distributed among thirty-five farmers and truckers for demonstration on a commercial scale. This flat dutch strain was originated by Mr. T. H. White of the Maryland Experiment Station.

Professor B. W. Anspon has devoted as much time as possible to conducting demonstrations in landscape work in the state. There is a great demand for assistance and information for the improvement of home grounds, school grounds and municipal Institutions. Professors Stoddard and Beckenstrater have also aided in the state work where their duties would permit.

Investigations.

Professor J. B. S. Norton who now devotes the major part of his time to investigational work with the Experiment Station has devoted part time under State Horticultural funds to the study of fusarium resistant tomato breeding and dissemination and on the records of the distribution of plant

diseases in the state during the year. He has frequently aided in an advisory capacity in plant disease and botanical problems with the members of the department and assisted in the preparation of a number of articles for publication.

Professor Cory has several insect problems under investigation. These are conducted in cooperation with the Station. These include projects in the control of the woolly aphis of the apple; the biology and control of some greenhouse pests; practical tests of maggot traps for the control of house flies and comparative insecticide tests. Report of this work will be given elsewhere. There are many insect and plant disease problems in the State demanding study and investigation with a view of devising satisfactory means of control.

College Work.

The instruction work in the school of horticulture at the College has been given as heretofore. The work is now so organized that the Instructors have not been interrupted for state work. The improved facilities and additional teachers have greatly increased the efficiency of the teaching work. It is believed that the departments of Entomology and Botany are now organized in an ideal manner for teaching, investigation and State Control work.

Maryland Week.

All members of the Department as well as those connected with any phase of state work at the college and station aid in promoting Maryland Week meetings and exhibition. The secretaries of the affiliated associations are connected with the Institution. The writer as secretary of the Horticultural Society devotes much time in the fall to making arrangements for the meeting and show. It is believed that time devoted to this affair by the officers and members of the department is well spent in promoting the agricultural and horticultural interests of the State.

Conclusion.

The work of the Department for the past year has been conducted in a most satisfactory manner. In a report of

this character it is only possible to give a general summary of the work conducted and in progress. Aside from the fruit grower's interest there is much to be accomplished in the control of insect pests and diseases attacking other crops.

There is more and more interest being shown by the farmers and fruit growers in the adoption of up-to-date methods for the control of pests and in cooperating with the officers of the Department to this end.

The executive work of the office has been heavy and much difficulty experienced in meeting the demands with our limited funds. It is a pleasure in closing this report to thank all members of the Department and division for their earnest efforts in all matters affecting the general welfare of the work.

WEDNESDAY, NOVEMBER 15th, at 8 P. M.

JOINT MEETING GROWERS AND CANNERS.

PRESIDENT ISAAC H. MOSS: The meeting will please come to order. After the programme there will be more moving pictures, and I hope you will all remain.

Ladies and Gentlemen, as this is a joint meeting with Canners and Growers it gives me pleasure to introduce to you, as Chairman of the evening, Mr. W. M. Wright, President State Canner's Association.

ADDRESS.

W. M. WRIGHT, Choptank, Md.

Ladies and Gentlemen, it goes without saying that it is a pleasure to be here before you, representing two great causes that we here represent tonight,—that is, the farmer and the canner. I was reared on a farm until after seventeen years of age, and have been on the stage of action as a business man the balance of the time. It is useless to say how long I have been a business man, but longer than I was on the farm. I got notice from Professor Symons two days ago to preside at this meeting, and, being President of the Maryland Packers' Association, I received an invitation to attend a special function to be held to-morrow, and in that invitation there was

an outline of the object of the meeting to be held, and part of that composition I absorbed and appropriated to the use of this little discourse of mine for the evening. I think it is appropriate. I accepted it because I looked at it as being appropriate. Now we have got an interesting programme, as you will find on the general programme for this evening, and I have about three sheets here, so mine will be very short.

"It is during "Maryland Week" that the opportunity is afforded us to come together to contemplate the glories of the harvest-time, and with grateful hearts to acknowledge nature's bountiful mercies to us. Alas, too few of us are familiar with the wondrous story of Maryland as the result of an intimate personal knowledge of her rich and diverse resources. What a wonderful, generously endowed old State is Maryland, whose story is each year so interestingly retold during "Maryland Week" at Baltimore.

Cast your eyes about you and you find Maryland teeming with everything good. The display here in the Armory is proof of this statement, for there are apples, corn, tomatoes, beans, turnips, and everything that the appetite craves for. The products of Maryland soil come as a benediction from an All-Wise Giver to us whose blessed privilege it is to live within the delightful confines of this great old commonwealth.

A few years ago the idea of getting together the growers or producers was not even thought of. Every man was for himself. It was competition then, and severe, destructive competition; but now we have come to know the value of co-operation. Somewhere, sometime a mind caught the vision of the practicability of united effort, and somewhere the hope was born that the growers of Maryland, working together with the canners of Maryland could develop a situation never before dreamt of in their economy.

It is highly proper that the annual meeting of the Maryland Canners and Farmers should be coincident with this great harvest festival, for the interests of the canner of Maryland are one with those of the farmer of Maryland. Here the opportunity is afforded the canner and farmer to meet on common ground, for what is of advantage to the one cannot be without advantages to the other. Remove the can-

ning industry from Maryland and you have dealt a reeling blow to her agricultural prosperity, for tenantless canning houses bespeak the near presence of tenantless, unyielding farmlands.

If Maryland Canned Foods are to be our glory and our proud boast, we cannot separate the Maryland farmer from the Maryland canner. The best canned tomatoes and the best canned corn find their first expression in the mental attitude of the farmer. It is the purpose of Maryland Week, not only to display the products of the farmer and canner so that the people at large, as it were, could see the results of a united effort, but also to bring them into a more familiar contact with the story of Maryland's agricultural pre-eminence.

Maryland! There is magic in the very name. But if we are to secure a decent respect for Maryland abroad, we must not refuse a loyal and faithful obedience to her demands at home. Maryland Week comes to unite producers and conservers, each closer to the other. It comes to unfold new possibilities, new aspirations, and higher ideals. It comes with a plea of co-operation upon its lips; it comes to scatter doubt and distrust. The continued growth and the continued prosperity of this great farming and canning business in Maryland is bound up in one great word,—"Co-operation." The very object and the very aim of Maryland Week is to make the name of Maryland stand for high principles and high ideals. And so long as those principles or ideals shall remain inviolate, so long shall it be possible for Maryland to be without sectional limitations or sectional restraints.

But Maryland Week comes to do still other things,—it comes to bring the canners and growers of Maryland together within the cordial, trustful bonds of a helpful and friendly intercourse. It comes laden with unseen advantages to them. It comes among other things to silence undeserved criticisms often uttered. It comes to build substantially—for Maryland.

We come to make two blades of grass grow where but one is now growing, two tomatoes where but one is now growing; and if we of the present generation want to contribute anything to the future good of Maryland, it is high time for us

to arouse ourselves and throw our energies together for this comon cause.

CHAIRMAN W. M. WRIGHT: Now, the next on the programme. "Co-operation Between Grower and Canner," by Charles G. Summers, Jr. Mr. Summers. (Applause).

"COOPERATION BETWEEN CANNER AND GROWER."

By CHARLES G. SUMMERS, JR., President Baltimore Canned Goods Exchange.

Mr. Chairman, Ladies and Gentlemen:-

It is a pleasure as well as an honor, to be allowed to address this gathering of Farmers and Canners. The matter of Food Supply is undoubtedly the most important of any question that arises at any time. This has been demonstrated most clearly during the past twelve months, when we have been called upon to feed a larger proportion of the people of this world than ever before. In the last analysis, a man will pay any price for food; without it he cannot live. The Farmer has become King; he is now enjoying the returns, through high prices for his products, that are his rightful due. The Canner may not be a producer of food, but he fills a most important part, in that he takes the products of the fields and orchards in times of plenty, and by sterilization in sanitary containers, makes that food available for the entire world at all seasons of the year. Thousands of acres of Maryland soil are given over to growing Canner's crops, and the money paid Growers by Canners, is a most important part of the Grower's income.

Possibly the very great extent of the Canning Industry may not be realized by all who are here tonight, and it may be worth while to state the 1915 pack of three articles only—tomatoes, corn and peas, within our State, are reported as amounting to 5,267,000 cases, or the tremendous total of 252,816,000 cans. These figures may be surprising, but they undoubtedly underestimate rather than overestimate the pack of Maryland, and they do not include any fruits, or

oysters and no vegetables except the three above mentioned. The Canning Industry extends now to almost every part of this country. Today, Maryland packs 10% to 15% of the total canned foods of the United States. Some years back, Maryland produced a very much larger proportion of the total, but unfortunately for both Growers and Canners, the Maryland pack has not kept pace with the growth of the Canned Foods business of the United States. The reason for this I would say, has been lack of intelligent cooperation between the Growers and Farmers, possibly the lack of information on the part of the Farmers as to what the Canners should have, if the fame of our canned foods and the volume of our trade are to be maintained and increased. The Canning Industry of other states, particularly New York, Ohio, Indiana, Illinois, Michigan and Wisconsin, has grown by leaps and bounds. Where the greatest and most permanent increase has occurred, we find the Canners and Farmers working together to produce such quality as will certainly please the housewife, who is the final judge as to whether our efforts to please her have been successful. Give the housewife a can full of ripe tomatoes carefully handled, firm and of good flavor, or a can of young peas that are tender, and that please her taste, or of anything else of similar high grade in the Canned Foods line, and the next day she calls for more, and in addition, tells her friends how delicious a certain brand of Canned Foods were. At once a trade for that particular brand is established. On the other hand, give this same housewife a can of tomatoes that are partly green or are watery, or a can of corn where the corn is tough and lacks flavor, and she at once says, "Canned foods are unsatisfactory." She turns to something more appetizing, and the trade for canned foods generally is thereby diminished. Multiply this one housewife by thousands and tens of thousands, and you approach the real condition, and certainly appreciate the extreme importance of quality. To make quality, the Canners must start with good fruits or vegetables, and here is where the canner and the farmer can cooperate. Everyone of you know that some farmers use great care in handling their products, and that the tomatoes, corn or peas

they deliver to the canner, are all that can be desired, and you also know, there are growers who are careless, and the fruits and vegetables that they deliver to the canners leave much to be desired.

Do you know that New Jersey and the central West regularly get from 5c to 10c per dozen more than Maryland canners are able to secure for canned tomatoes? Such is the case. If you ask the reason, I can only say that although Maryland can grow tomatoes that are the equal of any of the world, yet many Maryland Farmers and many Maryland canners fail to realize the necessity of producing "quality" goods. The farmer is frequently furnished with seed that is either not of the best variety, or else is not suitable to his soil. In addition, some of the farmers do not use sufficient care. They allow their pickers to mix tomatoes that are overripe, and also tomatoes that are partly green, with tomatoes that are in prime condition. The careful canner will endeavor, by picking out the green ones and allowing them to ripen, and by discarding tomatoes that are unfit, to pack a high grade, but in the rush of a canning season, this grading cannot be done thoroughly, and even where one or two Canners are able to pick strictly high-grade goods, the output of other canners who are not so careful, whose goods are offered as of the same grade as the careful canners, diminishes the market price for the finished product, and certainly you realize that anything that diminishes the price the canner is obliged to accept for the finished product, must also diminish the price he is able to pay the farmer for the raw fruits and vegetables.

Each of us has occasion to notice during the growing and canning season many things, some of which make a lasting impression upon us, and it may not be out of place for me to refer to the work a canner who I am acquainted with, has been doing with some of his farmers in an effort to correct some conditions which the canner thought could be improved. This canner found that his tomato canning season did not start, as a rule, until about the first of September, which meant valuable time lost before that date, and that about September 15th he regularly experienced a glut, which

taxed both his growers and the canner to the limit, and resulting in the farmers being unable to pick and haul their tomatoes as fast as they ripened, and the canner being unable to handle all of the tomatoes he received on his contracts, and further, in the great rush of the glut season, in his not being able to exercise quite the care that he desired to make his goods of the best possible quality. The farmers in the section referred to had been planting only what is known as the standard varieties of tomatoes, such as Stone, Red Rock, etc. The canner persuaded some of his farmers to plant a part of their acreage of early or second early varieties, such as Bonny Best or Chalks Early Jewel. At first the yield of these early varieties which the farmers planted in the old way—four feet apart each way—was unsatisfactory, so the way of planting was changed to three by three feet, which set more plants to the acre. The result has been very satisfactory to both the farmer and the canner. The tomato season now starts with that canner about the last week in July, and continues until about October first, giving both farmer and the canner time to handle the tomatoes as they ripen to best advantage, and without the loss they previously had when plantings were confined to late varieties only. It also developed that in this canner's section, the early varieties referred to were more satisfactory for canning, the tomatoes being firm and of better shape, peeling with less waste, and packing a superior article. Planting the vines closer resulted in the farmers getting a larger yield of tomatoes per acre than they previously had enjoyed, and planting early ripening varieties resulted in practically every tomato ripening before there was danger from frost. When the standard varieties only were planted, many of the farmers lost considerable proportions of their crops, whenever there was an early frost, many green tomatoes being frosted.

Another thing this canner did, was to get his growers to change over from growing string beans, which very few of us enjoy eating, to a stringless bean which is of splendid quality if packed at the proper stage of maturity. This canner gets a higher price for his stringless beans than he was formerly obliged to accept for his string beans, and in turn

gives the farmer a higher price for the stringless bean than he was previously able to pay for the lower grade string bean. These two instances, certainly should suggest to us many ways in which we can benefit both the grower and canner, if the situation is studied, and if we will profit each year by previous year's experience.

Meetings of this kind are an encouraging sign of the desire of both the grower and canner to improve conditions, to put Maryland canned foods in the front rank which will result in an increased demand, higher prices and greater returns for the grower. Let us resolve that each one of us will endeavor to improve quality, and by so doing, restore to Maryland that prestige which she once enjoyed as the Headquarters of the Canning Industry, but which has been sadly impaired through the careless methods and the lack of intelligent cooperation of some.

CHAIRMAN W. M. WRIGHT: By this programme it is arranged that we should have a general discussion by canner and grower, but, we have so little time; I see that you have appreciated the paper that has been read by a practical canner,—I have appreciated it myself very much, because what Mr. Summers says is the truth, and the next speaker listed on the programme is a man whom I have known for a great many years. I know he can give you facts, and he can give you the truth, and he is with us, and, following this, we have moving pictures, so I think it advisable to pass the general discussion. I will now introduce Mr. Orem, who will address you.

ADDRESS.

By HUGH S. OREM, Baltimore, Md.

Mr. President, Ladies and Gentlemen:

I find there is another occupation quite as honorable as that of the farmer or canner, and that is the housewife. In this little talk, which I assure you will be most informal, I shall speak of these three personages, representing as they do, the producer, the conservator, the consumer. I know a little about my subject, though I never was a farmer, have been a canner, but always a consumer.

Just as honorable as is the calling of canner or housewife, just so honorable is that of the farmer. Of the three, his occupation is far more ancient. He can be traced back to the beginning of time, to that period where Cain is described as a "tiller of the soil." I think it is very easy to give play to the imagination and picture Cain bringing home to this mother Eve, the first fruits of earth and vine and tree.

As the population increased in that far off Eastern section where we have always laid the Garden of Eden, unless perhaps, there are some farmers here who insist, as many have, that the Garden of Eden was located on the Eastern Shore of Maryland, but, wherever that most beautiful Garden was located, there the population of the world began. From this period and all through the days of Egypt's Pharaohs, through the days of the emperors of ancient Greece and Rome and the whole line of British kings to the present time, we look upon the farmer and acknowledge from the time when "the evening and the morning were the first day," it has been his business to feed the world.

We have spoken of the farmer in a very general way, now let us for a few moments, contract the view. Let us narrow it and talk to the farmer of Maryland.

It was only fourteen years after the Pilgrim Fathers landed upon that bald rock on the bleak Massachusetts coast, that the first settlement in Maryland was made in St. Mary's county, near where the little town of Leonardtown now stands. Before shelters were permanently built to house the few colonists who settled there, the farmer was overturning the earth and planting seeds that those with whom he was associated, might live and thrive. Here the first seeds were planted which would germinate, spring up and feed and sustain the lives of all those who had settled on its shores. At the same time also, there was planted in that little colony, that which the world has recognized, to have been the seeds of political and religious liberty.

Seventy-five years after this little settlement, a student in France locked himself in his laboratory and declared he would never venture forth until the experiments he had worked on so long and so faithfully should be perfected. Then it was

the theory was laid down and proven, so far as any theory can be proven, that fruits and vegetables could be conserved and transported miles away from the place of abundance, to feed the people in another or different place where there happened to have been a famine. It was shown that in times when the warm summer sun and copious rains made the earth bud and blossom as a flower and bring forth all that was good for man, that in some other place where Divine Providence had withheld the harvest, its people could share in the bounty produced and conserved in another section or place. That this side of the world, rejoicing in its plenty, is able to take care of and provide for the other side where conditions are diametrically the opposite. It was demonstrated that food could be so well taken care of when stripped from tree or plucked from vine, that in the famine of winter, when the earth was cold and unyielding, it would nourish and sustain all who partook of it.

These two great institutions, the farmer and the canner, are so closely allied they cannot be separated, and nothing can sever, or ought to sever, the relations which exist between them. If for a moment, you will let your minds go back beyond the days when most of us were born, to 1845, we hear of an Englishman lately landed on our shores, who had brought with him a secret to preserve or conserve the yield of the earth. His name is familiar at least to all the canners that may be here represented, and most likely to the farmers who supply them. I refer to Mr. Thomas Kensett, who conducted the business of canning in Baltimore for a number of years. He patented the process then existant in England, but it was not until 1860 or 1865 that the canning industry could really be said to be a practical institution and ways and means had been discovered to preserve fruits and vegetables for future use.

It would be most interesting if we knew the number of acres in this State that were under cultivation, say in 1860, as compared with the number of acres now under cultivation. I mean the number of acres devoted to what we term truck gardening or farming, supplying the fruits and vegetables partaken of at our tables. The number is legion. So you

see again, that the farmer and canner are so closely connected in the business that the farmer's prosperity largely depends upon the ability of the canner to take care of the various crops he raises. The farmer's acreage has expanded and increased merely because of the tremendous demand made upon him by his co-worker the canner. I am quite sure I am right in the proposition about to be laid down, that at the present time, with all the tremendous yield of the soil in the counties near this great city, that the daily supply of tomatoes which you farmers bring in to market, would be so great they would decompose and decay were it not a fact the canner is able to provide for all you each day pick from the vines.

But with all this, the records show you are barely able to produce enough to supply them as they ought to be supplied from day to day. But that is not the farmer's fault. We are not censuring him. He cannot say: "next summer I will increase the yield." Or: "next summer I will cut down the yield." Nor can he declare: "I will do as I please as to the quantity of fruits and vegetables I will bring to market." You do not think these things, because you have no control of them. If you do think them, then you begin to flirt with Divine Providence, and you have no right to do that. In olden times when the population increased to such a number there was not sufficient food to go around, it was the custom among savages to kill off a few of the natives until the demand and supply met. With your crops, you can only cut down the yield by cutting down the acreage. But that is not the idea or the hope of any farmer. He who is intent upon his business will utilize all his farm in the effort to produce the very best and the largest yield his soil allows.

In this city the past summer, there were manufactured 700,000,000 tin cans for the use of canners throughout the states. Now you can get an idea of the tremendous size of the crops you must raise to fill this number of cans. So again you see how important the farmer is to the canner and how important he is to you. There should be a most honorable competition between these two great callings. If, as a canner, I believe the string beans which you bring me do not measure up in flavor or do not appear to the eye quite as

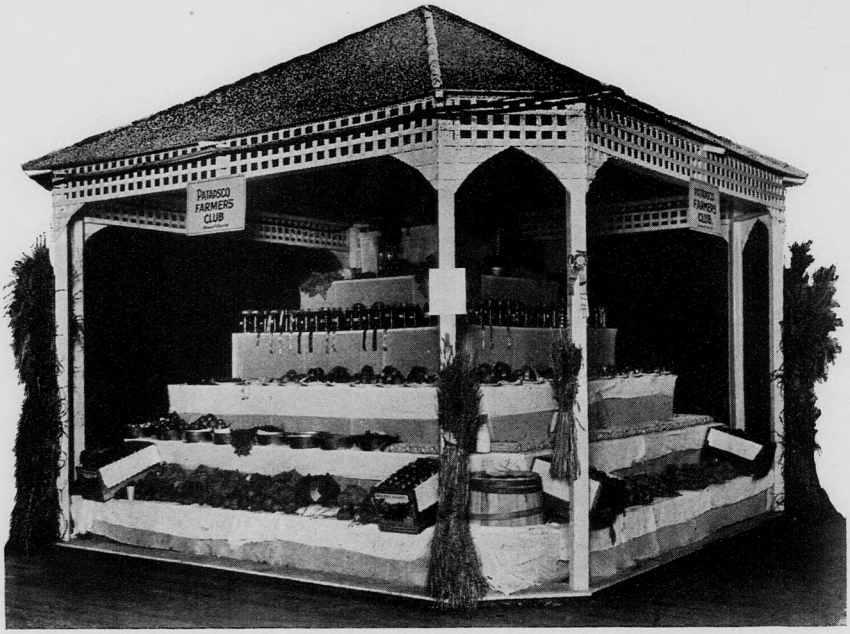
pleasing as those which are canned in some other state, I think that close alliance between the farmer and canner cannot be maintained unless the farmer is told his string beans are taboo. That the people throughout the United States who eat Maryland products, will not buy these string beans as against others packed in New York state, or Michigan or Wisconsin. The crops you produce are canned and sent all over the world. The canners, it seems to me are not doing their duty nor are they conserving their own business, unless they do get mighty close to the farmer and tell him of these things and why.

A little while ago, as I looked upon your screen, I saw a tractor and what it did. Well, you know, in ancient times man plowed with a stick. If you compare the modern way of farming with the stick—with what this tractor is now doing, what hope have you even with horse and plow and man. Suppose the tractor is not used by you, although it may be in general use in other states, can't you see the competition before you and which you are unable to meet, perhaps because you don't want to, or you are satisfied with what you are doing, or that you haven't kept abreast of the times, or that you are willing to let good enough alone, or that it is too difficult for you to put on your farm the improvements that you know are in operation in other places. The question which ought to concern you most is: "what are you going to do about it?"

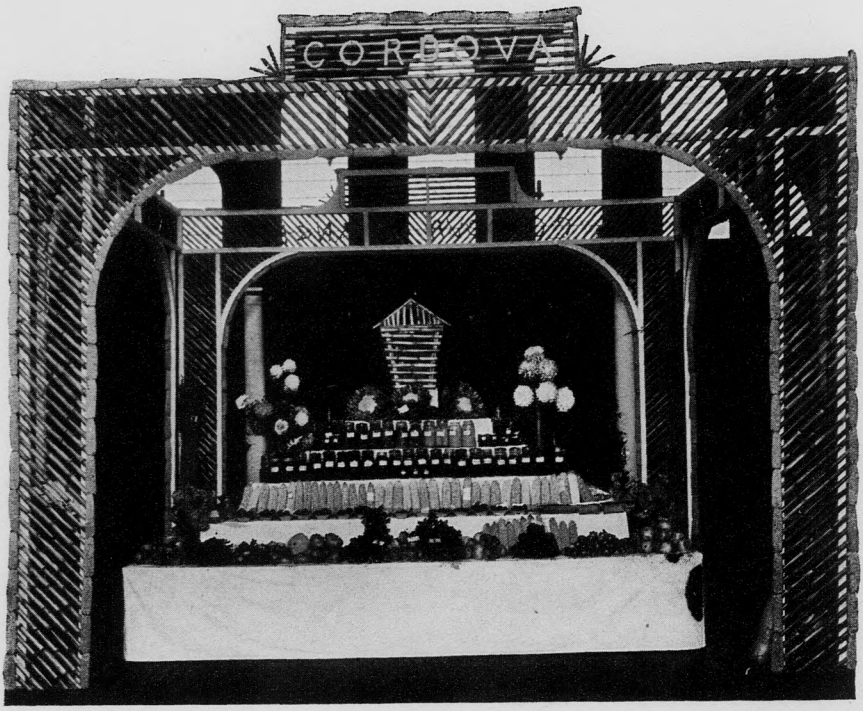
You may be criticised for the crops you gather, you may not know how to do any better, but is it not your own fault? The government of the United States has done more for the farmer and is doing more for him this day, and so is every state in the Union, including our own, with its splendidly appointed Agricultural College. I believe the farmer who finds difficulty in knowing what to do with his soil, so he may produce a larger or better tomato, a better flavored string bean, or larger ears of corn, is at fault if he fails to grasp the opportunity of finding out, without any cost whatever, that which may be worth thousands and thousands of dollars by the mere asking.

It does seem to me, if I were a farmer and these opportunities were not offered to me, I would say my agricultural college had better be torn down and destroyed because it was unable or unwilling to assist me at a time when I needed it the most. I believe it is the purpose of this college to remedy the very things I have pointed out to you. I believe, if criticism is made of any crop you gather, and it is pointed out wherein it does not compare with the crops other states are growing, that this splendid college, through its able and efficient secretary, Mr. Symons, will provide the means and impart information to you how a better tomato can be grown, and better beans and better corn and you will be putting money in your pockets by following the advice given.

There is another occupation—the housewife. Why do you suppose the canner should carry his complaint to the farmer? There is only one reason I can give. The consumer or the housewife, who knows good food when she sees it, prompts him to do so. When she complains to the Canner that his tomatoes or lima beans, his pumpkins or any fruit are not according to her taste and criticizes with judgment wherein the difficulty lies, there is no appeal from her decision. The canner is compelled to go to the producer and persuade him to correct, as far as possible, the conditions which are pointed out to him. Don't forget, my very good farmer and canner friends, that in almost every state of this Union there are canners. Mr. Summers stated in his address, that Maryland did fifteen or twenty-five per cent. of all the canning in the United States, but I think with but few exceptions, all the states are now engaged in this same industry of which Maryland is so proud. It is very easy to see if your canned products are known all over the United States, the same reason applies why the products of other states should be known all over Maryland. You are in competition at all times and from every angle. A lady might easily say, these peas that I am in the habit of eating are flavorless compared with some other peas that I frequently eat having been canned in the State of New York. While I know not how correct such a statement may be, I would feel grieved nevertheless that such a complaint had been made, but, as a canner I could not correct it.



PATAPSCO CLUB EXHIBIT
(Awarded First Prize)

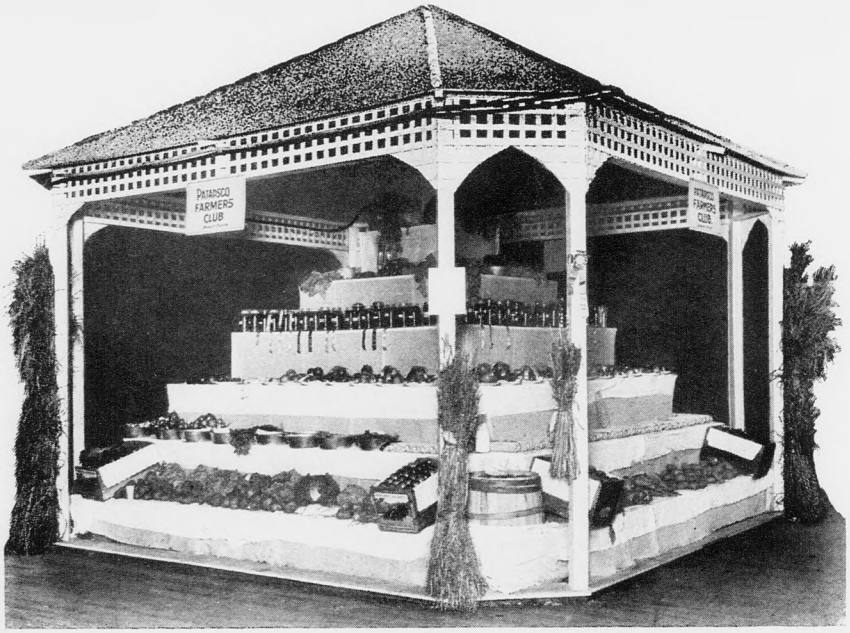


CORDOVA GRANGE EXHIBIT
(Awarded Third Prize)

You farmers might not care to correct it, or be interested enough to listen, but I surely would tell you of the criticisms and try to stir up your pride which may lead you to investigate.

I don't know how many years you can raise peas on the same soil and produce good peas. But I do know this, then we get right back to first principles, if I were a farmer I would be the very best in all the State of Maryland, so if I were told there were peas said to be better than the ones I raised, I would try to find the means, and I would find them from this college, how I could raise better ones and make a better sale of them than I ever did before. The housewife knows good canned peas when she sees them; she knows that the peas she may have had at dinner to-night, from the time the seed was put in the ground until the cook serves them on her table, were never touched by the hand of man or woman. The corn, of which your guests speak so favorably, from the time of planting until it is ready to eat, also has never been touched. There is no question at all about sanitary conditions of the canned food you eat, none at all. You housewives know you have gotten beyond that stage of wondering whether canned food is good to eat or whether it is poison. We don't talk about these things any longer. There was a time when such talk was general, for canned food had to be introduced and understood.

It is not impossible to understand why the food left over from a can will spoil tomorrow. We have gotten beyond that also. Housewives know they cannot cook food like the canner does. It is impossible to cook in your own home with a heat above 212 degrees, but your husbands, providing they are canners, will cook their peas at a temporature of 245 degrees. As the housewife cooks her vegetables, all the flavor ascends to the ceiling of the kitchen, then the windows are opened that it may escape. The canner doesn't do anything like that. He conserves all the flavor by putting the corn half-cooked, and the fruit absolutely raw, in the can and sealing it up, then cooking it from the outside, so that all the flavor and the wholesomeness is retained in the can because it cannot get out of it. If, after opening a can of food it is



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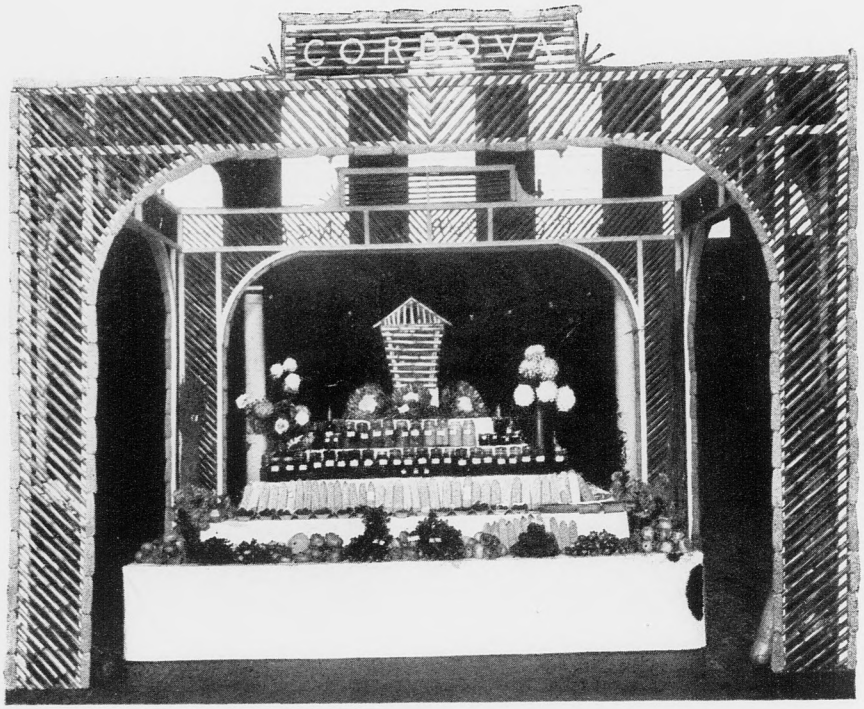

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left uncovered or unprotected, the food will spoil just as quickly as that which you have cooked and left unprotected, neither can withstand the atmosphere, and we all know that. The housewife is the very best friend the canner has. He can judge, in the districts in which he ships his food, whether or not it is acceptable now as it was when he first began to sell it, or whether from some other section there is a better food supplied in cans which takes its place. All of this shows, if the consumer and the canner were placed on different planes, yet the farmer is back of it all and every complaint reverts to him.

I find no fault that the government is doing so much for the farmer now, more than it ever did before. I am delighted to know also, that the government is suggesting propositions for the banker. I am pleased to know that it finally has come to the conclusion it will be well for it to take up the problems of the business man. So, Mr. Canner, your turn is soon coming. I am interested in every kind of business as it is carried on in every state and applaud and commend the government for its aid and assistance wherever it is placed. But there is no interest I have in any state, quite equal to that of my own. I am willing to praise and defend the output of Maryland's fruits and vegetables against any other state in the Union. Why shouldn't I love Maryland? I was born here. It was here I received my education in its public schools. I make my living in this state. My father was a son of Maryland as was my grandfather also. My ancient ancestors were landed proprietors in Talbot county.

Why, my friends, I have been in other states where I have heard men in the very fervor of excitement and interest praise and extol with burning patriotism, the land of their birth. I have seen them wipe their eyes from emotion. I have applauded them, and while so doing I have had arise within me that which arises in the hearts of all patriotic men as their thoughts turned to their native states. With my mind's eye turned to the hills and vales of Maryland, my thoughts have given expression to the line, "there's no place like home." It is to the farmers of Maryland that I have made my appeal, to the canners of Maryland that I speak;

it is to the housewives and consumers of Maryland that I present these views this evening.

One word more. Scenes from California were also shown upon the screen, and they have given me another thought. Prior to 1903, California was best known and spoken of as the state in which gold was discovered in 1849. It had always been known as the "gold state." But, in 1903, the great world's fair was held in the city of Chicago and California became better known than ever before. I visited daily the building erected by this great wealthy state, almost a third as long as the hall outside this room. There in endless variety were exhibited the finest apples the state could raise, the finest peaches, pears and apricots, as well as every other fruit that would grow in her soil. California well knew the world would be in Chicago, and she selected the time and place in which to display her choicest gifts. The slightest evidence of decay in any fruit exhibited today was quickly removed and replaced from the supply arriving each day in carloads by express. Oh it was great. Not only did the people of the United States get a better idea of California, but the people of the world were informed as well. Though that state has been most disastrously slow in election returns, it was never slow in what it started out to do by its exhibition of fruit fresh from a thousand trees.

The canning industry had its birth in California about that time. Having said to the people of the United States by its exhibition, "this is what we do in our state," they shortly after began putting their fruit into cans. You will notice they first left the eye feast upon it in its fresh state, then when they announced the same fruit could be had in cans to be eaten at any time, the people knew full well what to expect, and it set their mouths watering in consequence. That was a great advertisement for California and that's why its foods, from that time to this, can be found in every market in the United States. Farmers do you grow anything in this state better than that which is grown in California. I would not say to you, "you can't grow fruit as they do." I say I am afraid to say that, because you would say at once I do not know whereof I speak. I know your exhibit of apples

this year as in previous years, has not only taken the prize over all other apples, but I know some of them I have seen you display were not excelled by those of California growth. Now, if you would prosper as farmers and canners, some such advertisement as this will be a mighty good thing to follow.

I wish friend Symons would take this to heart and say to the men of Maryland: "The state is famishing for just some kind of advertising like California did." For if we can raise these kinds of fruits, it is to the world that we want to demonstrate that nothing that we grow on this soil can be better grown in any soil of any other state. Now if you canners believe that, let me put myself in your place again. If the farmer brings to you that which you desire him to bring and that which you ought to have, it means the very best he can produce. Knowing this, I would never let a single solitary can of it go out of this State unless on every separate can there appeared the name of Maryland and my name as the canner thereof. That is what you need, and there is only one way it can be accomplished—and that way is to begin at once to do it.

CHAIRMAN W. M. WRIGHT: I wish that we had the time, while the people are in such a frame of mind, to discuss this question now, but time is passing, and the members of the Society desire to transact some business before the moving-pictures. I now turn the meeting over to President Moss.

CHAIRMAN I. H. MOSS: We will now receive the report of the Nominating Committee.

MR. GEORGE MORRISON: Mr. Chairman, I take pleasure in presenting the report of the Nominating Committee:

For president, R. Bentley Thomas, Sandy Spring; for vice-president, William Johnston, of this city; for secretary-treasurer, T. B. Symons; for assistant secretary, S. B. Shaw. The other members of the Board: J. A. Cohill, Hancock; G. Hale Harrison, Berlin; James W. Boone, of Baltimore, and the President of the Peninsula Horticultural Society.

Perhaps you had better act on that first.

CHAIRMAN I. H. MOSS: Gentlemen, you have heard the nominations. Are there any other nominations?

A MEMBER: I move, Mr. Chairman, that the names as mentioned by the Nominating Committee be elected for the ensuing year.

A MEMBER: Second the motion.

CHAIRMAN I. H. MOSS: It has been moved and seconded that the names read by the Chairman of the Nominating Committee be elected as officers for the ensuing year. All in favor of the motion as stated will say "aye."; opposed, "no." It is so ordered. The Secretary will cast the ballot.

MR. GEORGE MORRISON: Now, the County Vice-Presidents, Mr. Chairman, I will read them all, and if any one desires to make any change, just mention it, and I will stop and make the change. For County Vice-Presidents:

Allegany	Fred R. Sloan	Lonaconing.
Anne Arundel	Roland Phelps	Brooklyn.
Baltimore	William Feast	Baltimore.
Calvert	F. O. Smith	Dunkirk.
Caroline	J. Spencer Lapham	Goldsboro.
Carroll	A. P. Snader	New Windsor.
Cecil	H. M. McCullough	Elkton.
Charles	E. H. Hungerford	Marshall Hall.
Dorchester	W. W. Byrn	Cambridge.
Frederick	R. R. Lewis	Frederick.
Garrett	James E. Harvey	Deer Park.
Harford	C. P. Whiteford	Whiteford.
Howard	W. S. Powell	Ellicott City.
Kent	W. B. Harris	Worton.
Montgomery	Samuel P. Thomas	Sandy Spring.
Queen Anne's	W. Irving Walker	Chestertown.
St. Mary's	G. F. Wathen, Jr	Loveville.
Somerset	F. E. Matthews	Pocomoke City.
Talbot	W. E. Sanger	Easton.
Washington	A. L. Towson	Smithsburg.
Wicomico	W. F. Allen	Salisbury.
Worcester	George A. Harrison	Berlin.

Baltimore City.

George Morrison D. B. Stewart.

CHAIRMAN I. H. MOSS: What will you do with the names as read by the Chairman?

A MEMBER: I move they be elected for the ensuing year.

A MEMBER: Second the motion.

CHAIRMAN I. H. MOSS: It is moved and seconded that the names as read by the chairman be elected county vice-presidents for the ensuing year. All those in favor of the motion will say "aye"; opposed, "no." It is so ordered.

REPORT OF THE AUDITING COMMITTEE.

We, the undersigned Committee on Auditing, beg to submit the following statement:

That we have examined the books and vouchers of the Treasurer of the Horticultural Society for the past year, and find them to be correct and in proper order.

ANDREW J. HANSON,
WALTER B. HARRIS.

REPORT OF COMMITTEE ON RESOLUTIONS.

The Committee on Resolutions appointed at this meeting desires to herewith submit its report:

We wish to tender our heartiest congratulations to the officers of the Maryland Agricultural Society, and the affiliated state organizations, for the successful and untiring efforts they have exerted towards making the 1916 Exhibition and annual meeting one of the most elaborate ever staged in the Armory.

We wish also to extend thanks to the following: The Mayor of Baltimore and Governor of Maryland for their ardent welcome.

To the "Baltimore Sun" and its corps of efficient reporters who have so zealously attended to the publicity of "Maryland Week," and in particular for the support given to the boy and girl club winners in the Home State Tour, which is a new feature of "Maryland Week," and one which has been a source of great interest throughout the State.

Also to the other city papers for their able support, and to the county press of the State.

The distinguished speakers on our program, the judges of our displays and the superintendents of the various departments.

The Chairman of the Floral Committee and the florists of Baltimore City for the wonderful exhibit they have staged.

The Chairman of the Dairy Exhibit for the especially attractive and educational exhibit installed under his administration.

The members of the State Associations for their splendid attendance and entries in the various classes.

The officers and members of the Farmers' Clubs, and Granges for the excellent booths which they have erected for competition in the Club Exhibit Contest.

The retiring officers who have so faithfully served in their respective capacities.

The Board of Directors of the Fifth Regiment Armory for extending numerous courtesies outside of the loan of the building for our 1916 exhibition.

To these persons, and all others who have in any way contributed to the success of our meeting and exhibition, we hereby tender heartiest thanks and sincere appreciation of the Society, and trust that we shall have a continuance of their cooperation.

WHEREAS, The Congress of the United States has passed an act known as the Rural Credits Act which provides for the establishing of twelve banks throughout the United States for the exclusive use of farmers, and having for their purpose the development of agricultural resources in different parts of the country; and,

WHEREAS, Baltimore City, owing to her being the business and financial center of a large farming area comprising North Carolina, Virginia, Delaware, Maryland and indeed, to a large extent, the whole South, is an ideal location for the establishment of one of the above-mentioned banks; and,

WHEREAS, In addition to her being the business center, she has special facilities for making the new enterprise a success on account of her exceptional opportunities for handling the propaganda through the national and state demonstration and extension service and her proximity to the National Capital, where, of course, the Central Bureau will be located; and,

WHEREAS, The need of labor and capital to restore the productive fertility of large areas of abandoned land; the need of encouraging the raising of table foods and milk products which must have readily available capital and many other agricultural needs peculiar to the territory adjacent to Baltimore demand that an institution such as provided for in the Rural Credits Act be established in that city; therefore,

LIBRARY, UNIVERSITY OF MARYLAND

BE IT RESOLVED, By the Maryland State Horticultural Society that the Federal Farm Loan Board is hereby urged for the reasons set forth above, and for many others of equal or greater importance, to establish one of the twelve Farm Loan Banks in Baltimore City, Maryland, as the most effective means for accomplishing the purpose intended by the Rural Credits Act.

R. BENTLEY THOMAS, Chairman;
J. ANDREW COHILL.

INSECTS OF 1916.

E. N. CORY, Entomologist, Maryland Agricultural Experiment Station.

More injurious insects were reported during the year than have ever before been reported for any single season. Whether the public generally has gradually become accustomed to consulting the Entomological Department of the State in regard to its insect troubles, thereby making more voluminous and exact records possible or whether the number of pests was actually greater, it is impossible to state. It is hoped that the entomological service is being made use of by more people each year.

The following is a brief account of a few of the most injurious insects taken from the year's records of over 60 pests.

ORCHARD PLANT LICE.

The prevalence of apple tree plant lice throughout the State in injurious numbers, was the most notable feature of the year from the orchardist's standpoint. Three species of aphids are common in Maryland orchards. A brief description of each is herewith given in the hope that the information may prove of value to the growers.

THE APPLE APHIS.
(*Aphis pomi De Geer.*)

By far the most common aphis on the apple is the above named species. It lives the entire year upon apple trees and

is particularly abundant on young trees or water shoots on old trees. The eggs are deposited in the fall on the new growth about the bud scales and old leaf scars. These are shining black objects about 1/32 of an inch long. They hatch about April 1st into minute green plant lice which cluster at once upon the opening buds, later going to the leaves, where the feeding on the under side causes curling of the leaf, forming thus a pocket within which the lice are protected.

The first generation from eggs are known as "stem mothers," as these give rise to all succeeding generations by the birth of living young. The second generation is principally wingless and serves to colonize the leaves the "stem mothers" are on. In the third generation some winged females are produced that migrate to other leaves on the same or nearby trees, establishing new colonies.

Wingless and winged females continue to be produced until early fall and they in turn produce asexually the countless young that infest the leaves throughout the season.

In the fall males and egg-laying females are produced that pair and deposit eggs upon the new growth thus completing with their subsequent hatching in the spring the life cycle.

The first lice to hatch are dark green in color while the succeeding generations are light yellowish green.

The Oat Aphis.
(*Aphis avenae Fabr.*)

This plant louse is quite common in Maryland though not so injurious as the other two since it migrates early to its summer host plants, grasses and grains.

The eggs of this aphid are deposited on the young twigs of bearing trees in protected locations such as scars, under bud scales, etc. They are laid in the late fall and even in early winter. The eggs hatch earlier than any other apple aphis eggs, the lice frequently appearing before the buds are showing green.

While many are killed they seem to be able to maintain themselves until able to insert their beaks into the tissues between the bud scales. After the bud clusters are separated

and until the petals have fallen, aphids may be found in comparative abundance. They then begin their migration to their alternate hosts and do not reappear on the apple until about October. Subsequently males appear and the eggs are deposited.

The oat aphis may be separated from the green aphis by the alternate transverse stripes of light and dark green across the upper surface of the body.

The Rosy Aphis.
(*Aphis sorbi Kalt.*)

This aphis may be recognized by its pinkish hue and the sometwhat pulverulent covering on its upper surface.

The lice hatch somewhat later than the preceding species, feeding on the buds and leaves and begin to produce young wingless females very shortly thereafter. The migrating wingless forms leave the tree about the first of May and fly to their alternate hosts, the weeds known as plantains. This migration continues until practically all of the lice disappear from the tree.

They reappear on the apple tree in October and deposit eggs, normally on the larger limbs and the trunk.

This louse curls the leaves of the apple and is probably responsible for the major injuries to the fruit.

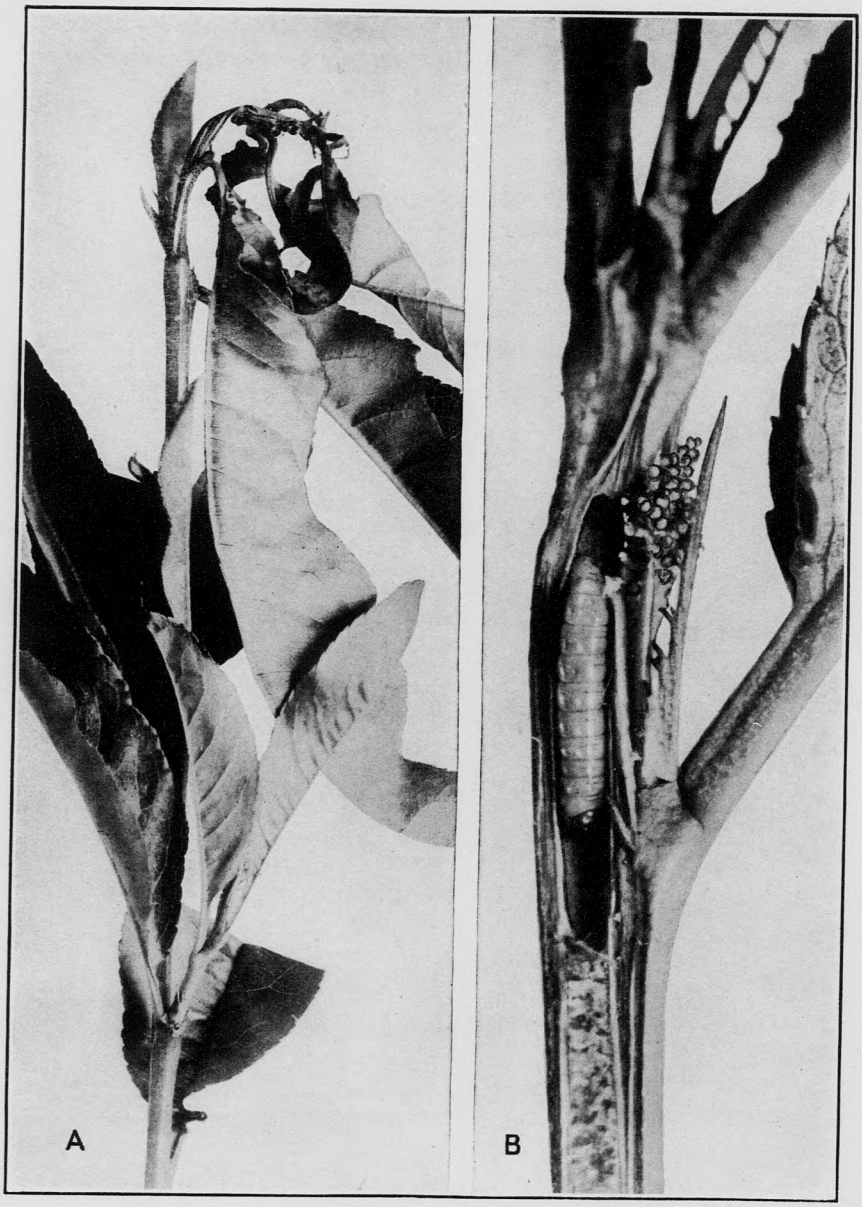
Control of Aphis on Apple Trees.

Considerable diversity of opinion and practice prevails among orchardists and entomologists as to the best procedure in combatting these pests.

Lime sulphur is effective in killing a large number of the eggs of the lice and except in seasons unusually favorable for their multiplication it will prevent the major portion of the injury if applied thoroughly in the dormant season.

It should be remembered that the trunks should be sprayed as well as the twigs in order to kill rosy aphis eggs.

Normally only a very small proportion of the aphis eggs hatch but the great fecundity of the insects provide for a large infestation in a short time under favorable weather conditions.



THE NEW PEACH PEST, *LASPEYRESIA MOLESTA BUSCK.*

A.—Typical exterior appearances of larvae injury to peach shoot.

B.—The same shoot cut open, showing thee larva in its burrow. (After Quaintance and Wood, Jour. Agr. Research Vol. VII, No. 8.)

Even should the dormant treatment be reasonably successful it may be necessary to spray with 40% nicotine at the rate of 1 part to 1000 parts of water. At a later date the addition of the above spray to the codling moth spray when the presence of a large number of aphids necessitates such action will be found to be the most effective and at the same time the most economical method to pursue.

At the Experiment Station we have kept the orchards free from injurious numbers of these lice by dormant spraying except last season when the fruit on our apples of the Bloomfield variety was badly distorted. It has been our practice to postpone spraying as late as possible. More exact data on the control of apple plant lice will be gathered this season by a comprehensive project on the subject.

The New Peach Pest.

(*Laspeyresia molesta Busck.*)

Probably the most serious record of the year was that of the appearance of a new peach pest, Laspyresia molesta, Busck. This pest is new to this country and has probably been introduced from Japan.*

The larva of this moth tunnels the terminal shoots of peach, plum, and cherry trees, and also infests the fruit. It is this latter habit that makes the pest especially dangerous, as the attacking of the twigs may not result seriously except in the case of nursery stock. In such cases, the trees may be forced to put out side branches, making the tree undesirable to plant.

The insect has several broods and hibernates in the larval form in the excavated end of the twig, under bark scales, or possibly in the ground at times.

The pest has appeared in three localities on the Western Shore but has not made its appearance on the Eastern Shore. Every grower is strongly urged to be on the lookout for the pest and is asked to send specimens of injured twigs to the Entomologist.

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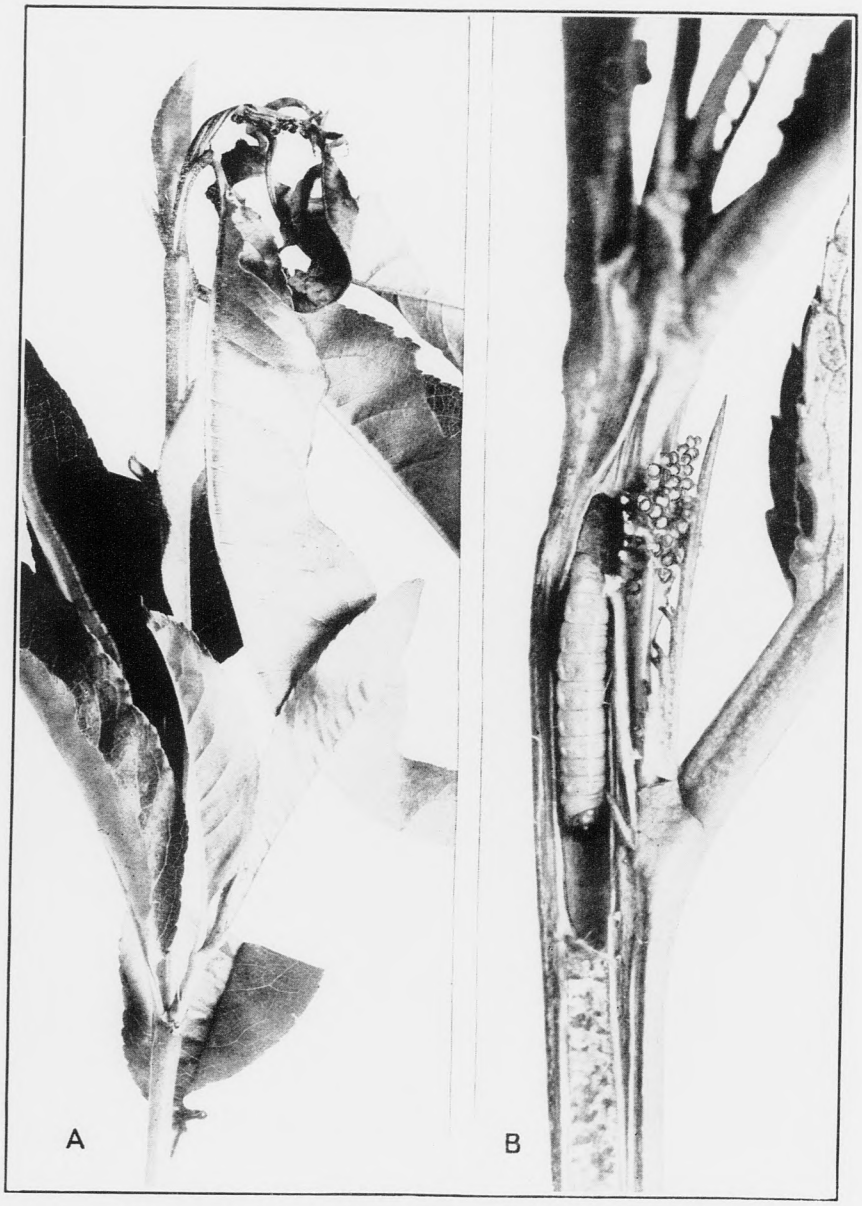
*Laspeyresia molesta, An Important New Insect Enemy of the Peach. (Journal of Agricultural Research, Vol. VII, No. 8.



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The Codling Moth.
(*Carpocapsa pomonella Linn.*)

There was considerable side injury by the second brood codling moth, apparently bearing a distinct relation to the degree of control, in the orchard, of the first brood. Our experiments this year on the comparative efficiency of arsenate of lead and arsenate of lime, gave poorer results by the one-spray method than ever before. In these plots, side worm injury constituting about one-half of the total codling moth injury was recorded. In this connection, it might be stated that our records this year show the above two poisons to be effective in approximately the ratio of 7 to 5.

TRUCK CROP PESTS.

The Striped Turnip Flea Beetle.
(*Phyllotreta vittata Fabr.*)

This little beetle was extremely numerous the past season, doing a great amount of damage on the late cabbage crop. The beetle is polished black in color with each wing cover marked by a broad irregular band of yellow running lengthwise of the wing.

It may be controlled by spraying the plants with arsenate of lead, 1 pound to 50 gallons of water, to which has been added a sticker or spreader such as soap or molasses. The best sticker for cabbage spraying is made from 2 pounds of rosin, 1 pound of sal soda and 1 gallon of water boiled together in an iron kettle for 1½ hours. This amount is sufficient for 50 gallons of spray. Dusting is equally effective. Use powdered arsenate of lead or lime or arsenite of zinc in combination with 25 pounds of air-slaked lime or sulphur. Several commercial dust mixtures such as the dry Bordeaux with arsenate of lead added or Micro, a combination of sulfur and arsenate of lead are effective.

The Cabbage Worms.
(*Principally Pieris rapae Linn and Plusia brassicae Riley.*)

Efforts were made to ascertain the most effective poisons and the best method and times of application of them in

controlling the worms and the comparative merits of one or several sprays, judged on the basis of crop production and profit.

The following is a summary of the materials and results:

Arsenates of lead and lime and arsenite of zinc were sprayed and dusted on in combination with soap, molasses and resin sticker as spreaders and stickers for the sprays and sulfur and lime as inert carriers for the dusting. In addition dry Bordeaux and Micro were used.

One half of the field was treated as soon as any worm injury was noticeable and continued as many times as necessary to keep the plants worm free. The balance was treated only after the injury was found to be severe.

The resin sticker proved best as such—soap spread the sprays well; molasses poorly.

The first half received three applications and the second half one treatment. Excessive rains following each application washed off practically all sprays but left some of the dusting materials. Only two applications would have been necessary had the weather been different.

The results show an increase of 25% in production for the plants treated 3 times over those treated once. Spraying on the whole produced larger crops than dusting though the latter was decidedly less costly. Dusting 3 times as compared with dusting once produced a 50% increase in the crop. Dusting with poison plus sulfur did not show any advantage over dusting with lime plus the poison, and is much more costly. Dusting with any of the three poisons plus lime, twice per season or possibly 3 times in a very rainy season, seems to be the best treatment.

The Garden Flea Hopper.
(*Halticus citri Ashm.*)

This bug is dark brown to black, about 1/8 of an inch in length and gets its name from its habit of jumping considerable distances when disturbed. It is rather general feeder on truck crops and flowers. The past season it was found to be destructive to China asters, both outdoors and in the greenhouse. The feeding punctures show as white or yellow marks

on the foliage. These may be so numerous as to make the leaves yellow, unthrifty and unsightly. They moreover, injure the young buds causing many flowers to be reduced in size and beauty.

The pest can be controlled by the use of 40% nicotine sulfate at the rate of 1 pint to 50 gallons of water plus 2 pounds of laundry or Tak-A-Nap soap.

The Strawberry Leaf Beetle.
(*Typhophorus canellus Lec.*)

This insect is normally a pest of strawberries as its name would indicate but was found injuring a rose planting in the establishment of a Baltimore florist. The beetle is about 3/16 of an inch long and dark brown in color. They hide during the day under the clods and in the soil at the base of the plant upon which they are feeding. As the soil is moist or wet at least part of the day the beetles are usually partially covered with mud making it difficult to detect them among the clods of earth.

The beetles feed on the young, tender leaves, cutting holes in them. Frequently the leaves are so injured that what remains turns black; at other times, the leaves are simply disfigured by the feeding holes. Spraying with arsenate of lead 1 pound to 50 gallons of water plus enough soap to make a suds, when the roses are off crop or with hellebore at the rate of 1 ounce to 1 gallon of water when the roses are in bloom, will control the pests.

The Rose Midge.
(*Dasyneura rhodophaga Coq.*)

The rose midge continued its depredations in the establishment of a Baltimore florist and its control is under investigation by this department in cooperation with the Federal Bureau of Entomology. Previous investigators have recommended cleaning out all rose stock in mid winter and planting a different crop. As this entails considerable loss, this department devised methods of control which are being

tested out by the cooperating government agent with very satisfactory results. We hope to be able to announce before long a suitable control measure consistent with good greenhouse management.

The Phlox Plant Bug.
(*Lopidea media Say.*)

Serious injury for the past few years has been observed on perennial phlox in the gardens at College and at Takoma Park. This consists of a yellowing and sometimes death of the leaves due to the feeding of the above named bug. The insect is about ¼ of an inch long. The upper part of the body, except for the head and antennae are almost uniformly dull orange in color; the outer portion of the wings are of the same color, while the inner areas are black giving the insect, when the wings are folded, the appearance of having striped wings. Under parts and legs are black. The nymphs or young stages are almost entirely dull orange.

The eggs are deposited in the stems of the plants and all stages appear on the same plant during August.

Black Leaf 40 at the rate of 1 part to 500 parts of water combined with soap to make spreading easier will kill all insects hit, in less than 5 minutes. Stronger solutions, 1-120 and 1-240 kill almost instantly. A forcible spray should be used, as the separation of the wings by the spray, makes the solution more quickly effective.

The Catalapa Midge.
(*Cecidomyia catalpae Comstock.*)

The past season injury to the leaves, tips and pods of Catalpa begnonioides and to the leaves and tips of Catalpa bungei occurred at several points in the State. This insect is the subject of Bulletin No. 197 of the Ohio Agricultural Experiment Station, from which the life history and control is taken.

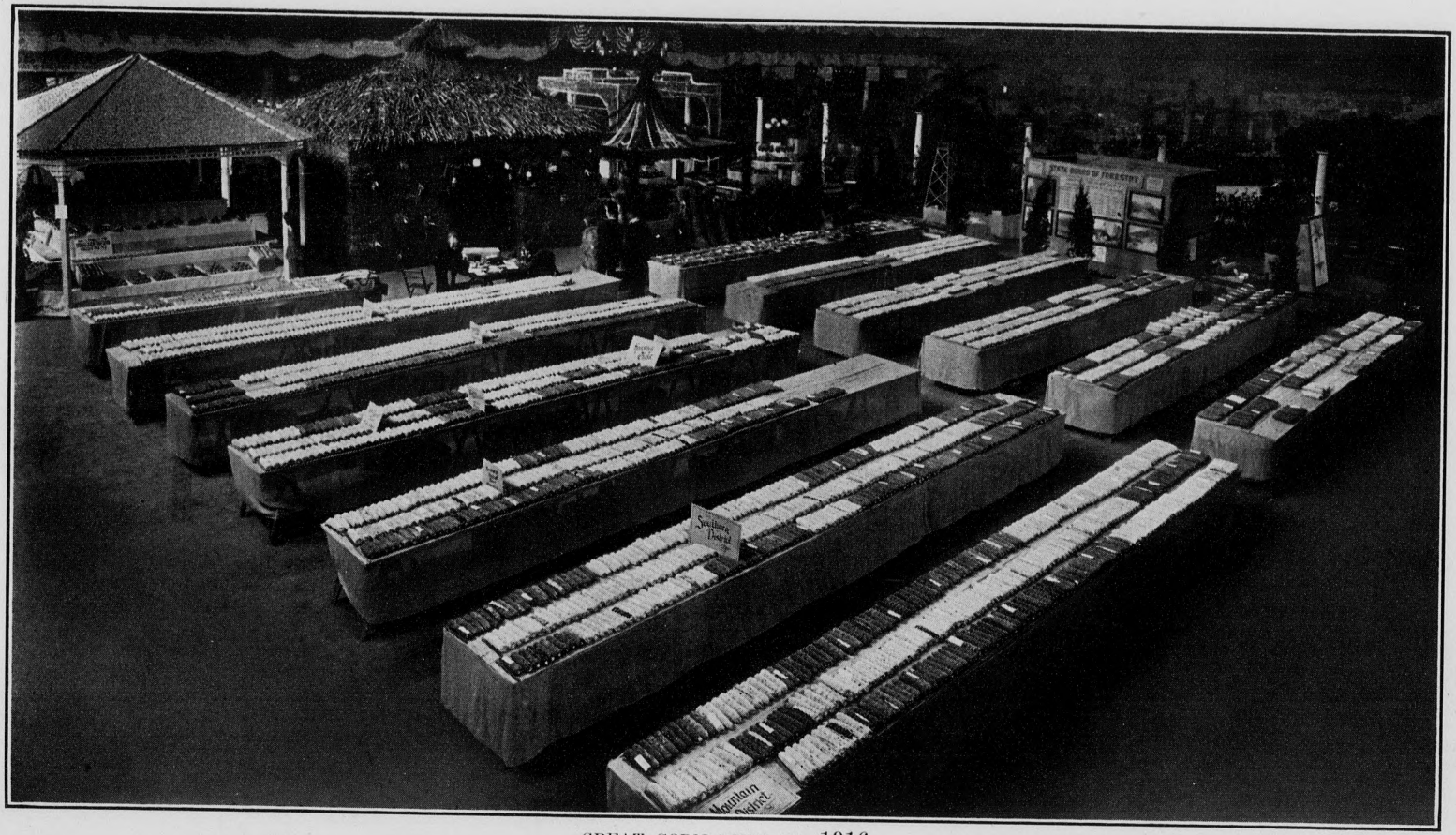
The insects injure the leaves by puncturing the leaves and feeding upon the sap, leaving small brown spots which later enlarge and frequently coalesce. Injury to the tips and pods is caused by the feeding of the maggots therein.

The injured leaves turn brown and ultimately fall. The tips wither and turn brown, making the whole tree unsightly.

The adult insect is a little gall gnat that deposits its eggs in the terminal buds. These hatch in a very short time and the larvae feed upon the leaves and terminal shoots, finally pupating in the earth at the base of the tree. Several broods are present during the summer. They probably winter in the soil.

Continuous cultivation during the summer around the trees, raking and burning all leaves at the base of the trees and spraying the cleared ground with 20% kerosene emulsion is effective in reducing the numbers for subsequent broods and for the following season.

Injury was noted at Baltimore, July 12, Contee, August 1, and College, August 3. Catalpae bungei was seriously injured at College.



GREAT CORN DISPLAY, 1916

REPORT

OF THE

MARYLAND CROP IMPROVEMENT ASSOCIATION

NINTH ANNUAL MEETING

THURSDAY, NOVEMBER 16th, 1916

The meeting was called to order at 2 P. M. by President J. P. Burdette. The Secretary-Treasurer, Mr. N. Schmitz, gave a summary of the minutes of the last annual meeting and submitted a financial statement which was referred to the Auditing Committee.

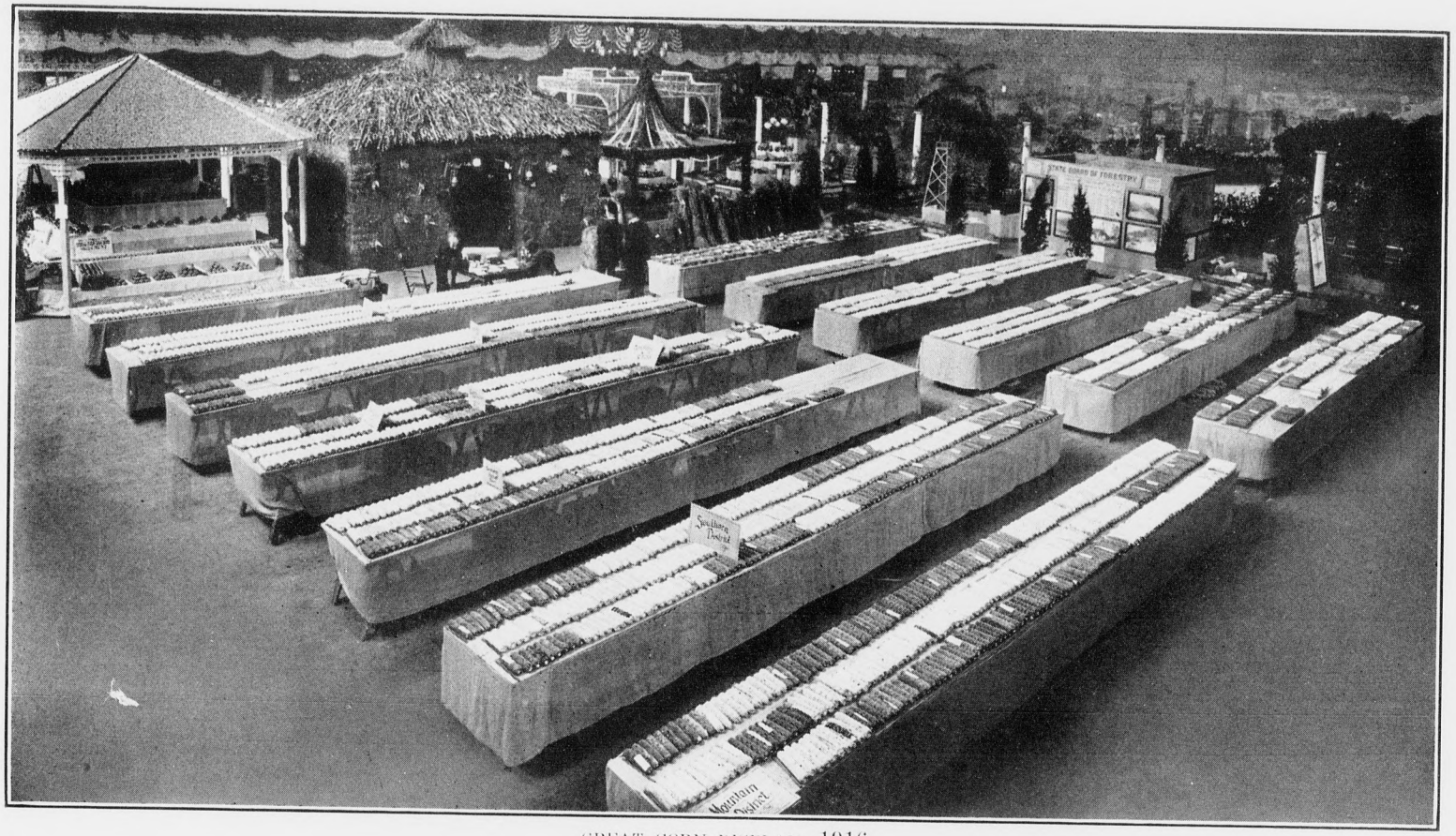
The President appointed the following Committees: Nominations A, B. Twining, Howard Mann and H. B. Perry. Resolutions: W. Oscar Collier, James R. Galbreath. Auditing: Dr. Augustus Stabler, G. Raybirld and W. Irving Walker.

PRESIDENT'S ANNUAL ADDRESS.

By J. P. Burdette, Crownsville.

I will promise you the President's Annual Address will be short, because we have, I think, two or three miles of moving pictures here this afternoon, besides Professor McCall.

It has been said that the farmers are the backbone of the nation. The farmers are. The ones upon whom our cities are dependent, the farmers, are the ones upon whom our government is dependent. We will find today at the head of our government, not only in the cities, but in the nation as a whole, men who have been brought up from the country. Nearly ninety per cent. of the officers in our nation and in our states are men who have been trained on the farms. The



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It has been said that the farmers are the backbone of the nation. The farmers are. The ones upon whom our cities are dependent, the farmers, are the ones upon whom our government is dependent. We will find today at the head of our government, not only in the cities, but in the nation as a whole, men who have been brought up from the country. Nearly ninety per cent. of the officers in our nation and in our states are men who have been trained on the farms. The

backbone, then, of the United States, is the farm boy, and we must look to the farm boy for the continuance of this nation. We have had a wonderful success as a nation. We will continue to be successful only as we preserve the greatest interest of the nation. That is, the boy and the girl on the farm.

There is a side to the farmer's life that we often overlook. The farmer has a moral duty to perform that the world at large judges him by, and yet does not consider very much about. They don't think about the moral side of farming, and yet there is a moral side to farming that every one of us ought to consider. The way we put up our fruit, the way we pack our apples, the way we send our potatoes to market, the way we send our fruit to market,—everything has a moral influence, not only upon the one who sends it out, but upon the one who receives it. We are judged by the way we send our products to the consumer. If we are sending our products to the consumer so that they can tell just as soon as they receive the package what kind and what quality it is, our names will be respected by the consumer.

Let me give you one illustration. In a state adjoining this one a farmer carried a load of peaches to market. It was an open market where bidders were present from two or three different states. He expected his peaches to be bid for and sold. One man bid for the peaches, bought them, and it turned out that the man was some one living right close to the station where the peaches were offered for sale. He had a large factory, and the peaches were carried to the factory and turned upside down, so that the man could get his baskets back. In the bottom of every one of those baskets the peaches were nothing like they were on top. He didn't expect them to be dumped out there. He didn't pick and pack them with that thought. He might. I was standing by when the peaches were dumped out, and, if you could have seen the look on that man's face when he saw those little peaches coming out, it would have been well worth your experience, for it was teaching him a lesson that I think he never forgot.

There are a great many of us who want—in fact, every one of us wants to get all that we can out of our produce, but

we must be perfectly honest in presenting that produce to the consumer. If we are honest in that, our boys will grow up knowing that we have set them the example of honesty and worth, and our nation will be preserved just as we who are older set them the example of true honesty and true worth.

Now those of you who heard the lecture from Prof. Waters the other night—and I hope many of you did, for it was one of the best lectures that we have had here for many years,—will remember what he said about robbing the children. That side of farming is something that we must consider. We who are making the money out of the farms today must consider that we are responsible as to whether we are robbing the future generations or not. Now, that side of farming ought to be considered more than it is being considered today. Are we robbing our children? You remember Professor Waters gave this illustration, how that today we have taken about one-third of the fertility from the virgin soil, and out of that one-third comes profit; the next third means a standstill with no profit at all, and the last third will mean starvation. Now, if we have been taking from our soil without improving our soil, without caring for the future just so we make a living, without any thought of the future, we are robbing our children, and we are morally responsible for that.

Now this afternoon we are going to have a discussion by Professor McCall on the soil of this State, and I am sure that he will give us some thought along that line that will help us to see whether we are robbing our children or not. I hope that these few remarks will help us to appreciate Dr. McCall, who will now address us on "The Soil Resources of Maryland." Dr. McCall.

THE SOIL RESOURCES OF MARYLAND.

By Dr. A. G. McCall, Maryland Experiment Station.

Mr. Chairman, Members of the Crop Improvement Association:-

I am not before you this afternoon to make a formal address to this Association, but rather to talk over with you,

in as familiar a way as possible, some of the problems concerning the maintenance of the fertility of the soils of your State, and the conservation of this great natural resource with which Maryland is so bountifully blest.

The work of crop improvement falls under two heads,—first, the improvement of the seed, and, second, the improvement of the soil. You can not hope to secure full results from the selection of better seed and better care of your seed, unless you have a good soil upon which to grow the crop. On the other hand, you can not hope to attain the full measure of success in the improvement of your crops yields, unless you have the improved seed with which to take advantages of the soil upon which you grow the crops. Thus soil improvement and seed improvement go hand in hand, the one naturally supplementing the other. I feel fully justified, therefore, in coming before this organization to discuss problems of soil fertility.

Upon coming into this State as a stranger, I was very much impressed with the wonderful possibilities which you have in this State, the unlimited possibilities of soil, and climate, and markets, which are evident as you go from the Eastern Shore to Western Maryland.

But to proceed to what I have to say concerning the resources of your State. In the first place, the soil resources may be included under five different heads, and I want to call your attention to these five different resources separately and then discuss each one of them in detail.

In the first place, you have the soil itself, and in this soil you have certain resources stored in the way of plant food materials, the maintenance of which is necessary in order to keep up the crop productive capacity of your soils. I was pleased indeed to have your Chairman allude to the soil resources in the very happy manner in which he did a few moments ago, and I merely want to emphasize what he has already said, namely that we have no right to so handle the soil that it will diminish in its productive capacity. We have no moral right to hand over to our children this soil in a poorer condition than it came into our possession. On the other hand, it is our privilege and it is our duty to hand this

soil over to the coming generation more productive than it was when we received it. And, fortunately, it is perfectly possible to do this and, at the same time, increase our immediate profits as well. Thus we have in the soil itself a great natural resource which we are bound to respect, bound to conserve, and bound to take care of because it has been committed to our care.

I wish to call your attention to the fact that we have in the State of Maryland approximately six and one-third million acres of land of which about five million are in farms and the remainder waste land. Approximately sixty per cent. of the total land area, or three and one-third million acres, are in improved land and the remaining forty per cent is classed as unimproved.

The productive capacity of this land depends almost wholly upon the power of the soil to feed the crop, and this, in turn depends upon the stock of plant food contained in the soil and upon the rate at which this food material is liberated, or rendered soluble and available for use in plant growth.

The tables shown on the charts before you will serve to indicate the relative abundance of the most important mineral elements of plant food in some of your important soil types. These charts are based upon the chemical analyses of the soils for total constituents, the calculations being made upon the assumption that the soil to the depth of seven inches over an acre weighs two million pounds.

TABLE 1.

Plant Food Materials in Maryland Soils.

(Acre 7 inches=2,000,000 pounds.)

	Carroll County		Frederick County	Baltimore County	Calvert County
	Sandy Loam	Clay	Clay	Bare Hills	Sandy Loam
	lbs.	*lbs.*	*lbs.*	*lbs.*	*lbs.*
Phosphorus.	440	1,140	968	1 584	176
Potassium..	6,640	46,800	58,500	30,500	1,990
Lime.....	1,800	3,200	8,000	16,800	800

It will be observed that the different soils vary a great deal in the amounts of phosphorus, potassium and lime contained in the surface seven inches, and that the amount of phosphorus is very much less the amount of potassium, that latter being present in relatively large quantities in all of the soils with the exception of the sandy loam from Calvert County.

This chemical analysis of the total soil constituents gives the invoice of fertility actually present in the soil strata sampled and analyzed, but the rate of liberation is governed by many factors, some of which may be controlled by the farmer, while others are largely beyond his control. Chief among the important controllable factors which influence the liberation of plant food are limestone and decaying organic matter, which may be added to the soil by direct application of ground limestone and farm manure. Organic matter may be supplied also by green-manure crops and crop residues, such as clover, cowpeas, straw, and corn stalks. The rate of decay of organic matter depends largely upon its age and origin of the material, and it may be hastened by tillage. A chemical analysis shows correctly the total organic carbon, which represents, as a rule, but little more than half the organic matter; so that twenty thousand pounds of organic carbon in the plowed soil of an acre corresponds to nearly twenty tons of organic matter. But this organic matter consists largely of the old organic residues that have been accumulated during the past centuries because they were resistant to decay, and two tons of clover or cowpeas plowed under may have greater power to liberate plant food than the twenty tons of old, inactive organic matter. The recent history of the individual farm or field must be depended upon for information concerning recent additions of active organic matter, whether in applications of farm manure, in legume crops, or in grass-root sods of old pastures.

Probably no agricultural fact is more generally known by farmers and landowners than that soils differ in productive power. Even though plowed alike and at the same time, prepared the same way, planted the same day with the same kind of seed, and cultivated alike, watered by the same rains and warmed by the same sun, nevertheless the best acre may

produce twice as large a crop as the poorest acre on the same farm, if not, indeed, in the same field. The fact should be emphasized that with the normal rainfall of Maryland the productive power of the land depends primarily upon the stock of plant food contained in the soil and upon the rate at which it is liberated, just as the success of the merchant depends primarily upon his stock of goods and the rapidity of sales. In both cases the stock of any commodity must be increased or renewed whenever the supply of such commodity becomes so depleted as to limit the success of the business, whether on the farm or in the store.

As the organic matter decays, certain decomposition products are formed, including much carbonic acid, some nitric acid, and various organic acids, and these have power to act upon the soil and dissolve the essential mineral plant foods, thus furnishing soluble phosphates, nitrates, and salts of potassium, magnesium, calcium, etc., for the use of the growing crop.

As already explained, fresh organic matter decomposes much more rapidly than old humus, which represents the organic residues most resistant to decay and which consequently has accumulated in the soil during the past centuries. The decay of this old humus can be hastened both by tillage, which maintains a porous condition and thus permits the oxygen of the air to enter the soil freely and to effect the more rapid oxidation of the organic matter, and also by incorporating with the old, resistant residues some fresh organic matter, such as farm manure, clover roots, etc., which decay rapidly and thus furnish or liberate organic matter and organic food for bacteria, the bacteria, under such favorable conditions, appearing to have power to attack and decompose the old humus. Bacterial action is also promoted by the presence of limestone.

The condition of the organic matter of the soil is indicated more or less definitely by the ratio of carbon to nitrogen. As an average, the fresh organic matter incorporated with soils contains about twenty times as much carbon as nitrogen, but the carbohydrates ferment and decompose much more rapidly than the nitrogenous matter; and the old resistant organic

residues, such as are found in normal subsoils, commonly contain only five or six times as much carbon as nitrogen. Soils of normal physical composition, such as loam, clay loam, silt loam, and fine sandy loam, when in good productive condition, contain about twelve to fourteen times as much carbon as nitrogen in the surface soil; while in old, worn soils that are greatly in need of fresh, active, organic manures, the ratio is narrower, sometimes falling below ten of carbon to one of nitrogen.

It should be kept in mind that crops are not made out of nothing. They are composed of ten different elements of plant food, every one of which is absolutely essential for the growth and formation of every agricultural plant. Of these ten elements of plant food, only two (carbon and oxygen) are secured from the air by all agricultural plants, only one (hydrogen) from water, and seven from the soil. Nitrogen, one of these seven elements secured from the soil by all plants, may also be secured from the air by one class of plants (legumes), in case the amount liberated from the soil is insufficient; but even these plants (which include only the clovers, peas, beans, and vetches, among our common agricultural plants) secure from the soil alone six elements (phosphorous, potassium, magnesium, calcium, iron, and sulfur), and also utilize the soil nitrogen so far as it becomes soluble and available during their period of growth.

Plants are made of plant-food elements in just the same sense that a building is made of wood and iron, brick, stone and mortar. Without materials nothing material can be made. The normal temperature, sunshine, rainfall, and length of season in Maryland are sufficient to produce fifty bushels of wheat per acre, one hundred bushels of corn, and four tons of clover hay; and, where the land is properly drained and properly tilled, such crops would frequently be secured *if the plant foods were present in sufficient amounts and liberated at a sufficient rapid rate to meet the absolute needs of the crops.*

Thus we find in every county different soils, requiring different treatments. You know from experience on your own farms one field will respond to one treatment, while another

field will require quite another treatment. Referring again to the chart, (Table 1) if we compare the clay soil in Carroll county with the clay in Frederick county, we see that the former has one thousand one hundred and forty pounds of phosphorus and the latter nine hundred and sixt-eight pounds. Your Chairman suggested this morning in looking over these charts, that we might have in this case an illustration of the action of lime in liberating phosphorous. In Frederick county they have more rapidly made available the phosphorus in the soil, and that accounts for the less amount found in that soil as compared with the soil from Carroll county. We have no means of knowing whether this is absolutely true or not, but that is a plausible explanation. The use of lime would tend to make available the phosphorus and potash in the soil, and would tend, in time, to deplete the soil of these elements more rapidly than if lime had not been used. I find some people criticising the use of lime, because it depletes the soil of the mineral elements of plant food. We should not refuse to use lime because it helps to use up the fertility of the soil, since it is only by using fertility of the soil that we are able to produce crops.

This clay soil from Frederick, you will note, has large quantities of potassium and considerable quantities of lime also. In addition to the ordinary lime which is calcium carbonate, there is in this soil large quantities of magnesium carbonate. Some limestone contains both calcium and magnesium, two materials that are very similar to each other, except that one will not replace the other. In this soil in which there are eight thousand pounds of lime, there is also present sixty-four thousand pounds, or eight times as much magnesium limestone. In this connection I want to call your attention to the fact that it has been found that when there is too much magnesium present in the soil in proportion to the calcium, the magnesium acts as a poison to the plant, and we find some soils actually refusing to grow plants because they contain too much magnesium. On soils where the magnesium is high, I anticipate poor results if we should use some of the limestone that is on the market in which you find both the calcium carbonate and the magnesium carbon-

ate. On the soils where the magnesium is not present in large quantities, but where the lime is mainly in the form of calcium carbonate, you will get no bad effects from the lime containing some magnesium. In case of doubt or if one is suspicious that his soil has been formed from dolomitic limestone the safe thing is to buy the limestone which is free from magnesium carbonate.

Here is another soil, the so-called bare hills of Baltimore county, which has some phosphorous, large quantities of potassium, and large amounts of lime.

This is a soil which is very unproductive. It has an abundance of lime, plenty of potassium, but very little phosphorous. From the behavior of this soil, there is something outside of the mere presence or absence of food material that is limiting the productive capacity of that soil.

Here is a sandy soil, a sample from Calvert county, which is a representative of about the poorest sandy soil in the State. You will note that the phosphorous content falls to 176 pounds, and the potassium to 990, and with very little lime. This is a typical sample of some of our sandier types of soil that are very low in the amounts of plant food material that they contain.

Such soils as this, of course, demand heavy fertilization and must be devoted to crops that will give high returns per acre in order to justify the expenditure of the money necessary to produce a profitable crop. I have tried from that chart, to indicate to you some of the problems on which we expect to work in the State and some of the problems which you will encounter in the handling of your soil.

Taking up the second resource of the State, the manures and the crop residues, especially the manures produced in the State, I want to call your attention, first, to this chart, (Table 2), which gives the fertilizing value of stable manure as determined by actual field tests at the Maryland Experiment Station.

TABLE 2.

Fertilizing Value of Stable Manure.

	Yields	
	Corn	Wheat
	bushels	bushels
Unmanured (average of 4 plots).....	38.1	16.1
Fresh Manure, 10 tons (average of 6 plots).	70.7	19.1
Rotted Manure, 10 tons (average of 6 plots)	65.1	19.1
Gain for fresh manure.....	32.6	3.6
Gain for rotted manure.....	27.6	3.0

Value of gain per ton of fresh manure..$3.44
Value of gain per ton of rotted manure. 2.91
Value of fresh over rotted manure..... .53

We might determine the value of the manure, and we frequently do, by taking a sample, making an analysis of the sample, and then computing the value of the nitrogen, phosphoric acid, and the potash, applying the prices which it is necessary to pay for those materials in commercial fertilizers and thus determine the fertilizing value, or the money value, of the manure. The values shown on the chart were determined by applying manure at the rate of ten tons per acre to two fields, alongside a small field left unmanured. By comparing the yields of the manured with that of the unmanured throughout the rotation we get the returns which the manure actually produced under field conditions. The average yield for four crops of corn on four different plots of land in Prince George County was 38.1 bushels average, and for four wheat crops 16.1 bushels. Fresh manure applied to six plots at the rate of ten tons increased the corn from 38.1 to 70.7 bushels and the wheat from 16.1 to 19.7 bushels. At the same time that the fresh manure was used, rotted manure was used at the same rate, the manure having remained out in piles and allowed to rot down before being spread on the land. The rotted manure increased the yields to 65 bushels for corn and 19.1 bushels for wheat, or a gain of 32.6 bushels of corn and 3.6 bushels of wheat for the fresh manure, and 27.6 bushels of corn and 3.0 bushels of

wheat for the rotted manure. It should be observed that the gain of the fresh over the rotted manure is very small for the wheat, but in case of the corn the gain is five bushels greater for the fresh than for the rotted manure. If we calculate the gain for each ton of manure, with wheat at a dollar and corn at fifty cents per bushel, the value of each ton of fresh manure is $3.44, and the rotted manure $3.97, a value which is fifty-three cents greater for the fresh manure than for the rotted manure. These gains, however, do not represent the full value of the manure, because of the fact that the chart does not show the returns from the increased yield of the grass which followed the wheat in these rotations, the records for the hay having been lost. The point which I wish to make is this: that we have here in Maryland, in the manures produced on the farm, a resource of enormous value and one which, perhaps, we do not fully appreciate at all times. Before we leave this chart, I want to emphasize the fact that the fresh manure taken direct to the field has been worth fifty-three cents a ton more than the manure which was allowed to rot before it was applied. In addition to this gain, your attention is called to the fact that the gain would be much more if we had taken into consideration the fact that it takes approximately two tons of fresh manure to make a ton of manure after it is rotted down.

On the next chart the value of this resource is shown, the calculation being based upon the number of farm animals on the farms in the State.

TABLE 3.

Live Stock on Maryland Farms, 1910.

	Number	Manure	
		lbs. per day per 1,000 lbs. live weight	tons per year
Cattle	288,000	70	2,943,000
Horses and Mules	178,000	50	1,624,000
Swine	302 000	56	617,000
Sheep	237,000	34	147,000
Total tons			5,331,000

Total value at $3.44 per ton for fresh manure, $18,338,640
Total value at $2.91 per ton for rotted manure, 15,513,210

Gain for fresh manure..... $2,825,430

The first column represents the number of cattle, horses, sheep and swine, on the farms in Maryland, according to the thirteenth census: 288,000 cattle; 178,000 horses and mules; 302,000 swine, and 273,000 sheep. Estimating the number of pounds of excrement produced per day for each class of live stock we find the total production of manure on the farms of Maryland to be 5,331,000 tons, not taking into consideration that produced in the livery stables and in the towns, much of which might be utilized in some sections. Applying the value of $3.44 per ton for the fresh manure, as shown on the previous chart to this 5,331,000 tons we find this by-product of the farms in Maryland, this resource, to be worth $18,338,640, and which by careless handling might very easily lose $3,000,000 worth of its most valuable constituents. This Association should emphasize on every occasion the importance of taking care of this very valuable resource which you have at hand.

Passing now to the third item of resources, the limestones of the State, you have, especially in Western Maryland, enormous deposits of limestone, which have been used for a good many years mostly in the burned form.

The oyster shell deposits of the Eastern and Southern Shores, constitute a source of lime which should be regarded

as a resource of enormous value, and one that is beginning to be appreciated. This oyster shell lime is practically the same in chemical composition as the raw ground stone and is a very valuable source of lime. You are probably aware of the fact that the last Legislature appropriated a sum of $12,000 for the purpose of equipping crushing plants, which would grind the shell and furnish the fine ground material to the farmers of the State at cost. These crushing plants should be able to furnish lime at a very low cost to those who are in the neighborhood of the great shell deposits, but there are many other localities that cannot be served by these State crushing plants, and in such localities the farmers should get together and buy a portable crushing outfit for crushing the oyster shell in their vicinity, thus saving the freight and the extra handling. The grinding could be done at times when the labor was not otherwise employed and would produce lime at a very low cost to the people who owned the machines. It could be made a neighborhood co-operative organization for the purpose of grinding the shells for their own use. I was talking this morning with one of our Eastern Shore men, who says he has an enormous deposit right at his own shore, where he would have to haul only from his machine across the field. In such localities, I am quite sure that it would be a very profitable arrangement for the people of the neighborhood to get together on this lime proposition.

The marl deposits of some sections of the State constitute a valuable asset both as a source of lime and for the potash which some of these deposits carry. Some of the old marl pits are well worth investigating, and while much of this marl is, perhaps, of such low grade that it would not be profitable to ship it any considerable distance, it has sufficient value to warrant its use for local applications.

The problem of soil improvement in this State, as in other states, hinges very largely on the utilization of the great natural resources of the State to the fullest extent. Some of you are wondering perhaps, that I have not mentioned commercial fertilizers. I have not mentioned fertilizers because I wished to direct your attention to the natural resources

which you have at hand. Furthermore, until our soil has a sufficient supply of lime, until we have taken steps to keep up the organic matter by the growing of green manuring crops and by the utilization of the manure and crop residues on the farm, until we have taken steps to do those things, the use of commercial fertilizers will surely lead to disappointment so far as the returns are concerned.

The Department of Soils Investigations of the Experiment Station is taking up a study of the soil types of the State with a view to determining the needs of each particular soil with respect to the fertilizer requirements. We want to be able to have this information for the use of the farmers and for the use of the county agents that are being placed in the different counties in the State, and so that we will be able to answer the questions which come up with regard to the management of the different soils in the State.

This work, as you realize, will take time. It will require some years to get these results, because the results of one year are absolutely worthless, practically, because under the climatic conditions of one year one treatment may give good results, while under the seasonal conditions of the next year that same treatment might not be nearly so effective as some other treatment. We must have the results of four or five years at least, before we can be reasonably sure that a particular treatment is to be recommended.

In the meantime, however, we hope to be in position to help with some of your problems and to this end we have established out on the floor of the Armory, a little laboratory there where we have invited the people of the State to bring in their soil samples for a lime requirement test. Thus far we have been able to make the tests promptly, and to give to the owners of the soils the results before they left the booth. This is a part of the work that we hope to continue, and I want now to extend an invitation to the people of the State to send their samples in to the Experiment Station at College Park, where we will be able to take care of them in our laboratory. The station is prepared to make the soil lime requirement test for the farmers of the State and also to test samples of limestone or of marl which are intended

for local use and not for sale as a commercial product. This Service does not apply to commercial fertilizers, which are examined by the State Chemist, Dr. McDonnell.

And we are placing our facilities at the disposal of your county agents so if your county agent needs help the Station is ready, willing and anxious to help him in his attempts to solve your problems, even to the extent of sending a man out to make examinations of the soil if it seems necessary.

A MEMBER: Can potash be used with profit on Maryland soils?

DR. A. G. MCCALL: I believe that on many soils in Maryland potash can be used profitably, but the point I want to make is that there are many soils where the potash doesn't do the work at all; it is the phosphorous content; and those are the points to watch, upon which we want to get some definite evidence to base our practice.

PRESIDENT J. P. BURDETTE: Any other questions? We have quite a little business yet. First we will have the report of the auditing committee. Dr. Stabler is chairman.

DR. AUGUST STABLER: The committee went carefully over the books. We didn't have any vouchers to compare with the books, but we found the additions in the book correct and the amounts footed up there as stated.

PRESIDENT J. P. BURDETTE: You have heard the motion that the report of the Auditing Committee be accepted. All in favor of the motion will say "aye." Opposed, "no." The report is adopted.

Now we have the report of the Committee on Resolutions. Mr. Collier is chairman of that committee. He has left his report here. Since our secretary is not here, I will have to read it myself.

MR. W. IRVING WALKER: Mr. President, since our secretary is not present, I move that our stenographer act as secretary pro tem.

WHEREAS the Congress of the United States has passed an Act known as the Rural Credits Act which provides for the establishment of twelve banks for the exclusive use of farmers

and having for their purpose the development of agricultural resources in different parts of the country.

AND WHEREAS Baltimore City, owing to her being the business and financial center of a large farming area comprising North Carolina, Virginia, Delaware, Maryland, Southern Pennsylvania, and indeed to a great extent the whole South, is an ideal location for the establishment of one of the above mentioned banks. And whereas, in addition to her being the business center, she has special facilities for making the new enterprise a success on account of her exceptional opportunities for handling the propaganda through the National and State Demonstration and Extension Service, and her proximity to the National Capital, where of course the Central Bureau will be located.

AND WHEREAS—The need of labor and capital to restore the productive futility of large areas of abandoned land; the need of encouraging the raising of table foods and milk products which must have readily available capital, and many other agricultural needs peculiar to the territory adjacent to Baltimore demand that an institution such as provided for in the Rural Credits Act be established in that City.

THEREFORE, be it resolved by the Maryland Crop Improvement Association that the Federal Farm Loan Board is hereby urged for the reasons set forth above, and for many others of equal or greater importance, to establish one of the twelve Farm Loan Banks in Baltimore City, Maryland, as the most effective means for accomplishing the purposes intended by the Rural Credits Act.

(Signed) W. Oscar Collier,
Jas. R. Galbreath.

President J. P. Burdette: You have heard the resolution. What will you do with it.

A Member: I move it be adopted.

Mr. W. Irving Walker: Mr. President, in seconding that motion, I would like to emphasize that we can't do too much to follow this resolution up, and I feel it the duty of nearly every farmer that is interested in rural development or the

development of our state to make an effort to communicate with the members of the Farm Loan Commission and urge personally the location of that bank in Baltimore.

PRESIDENT J. P. BURDETTE: You have heard the motion. It has been moved and seconded that we adopt this resolution. Are you ready for the question?

PRESIDENT J. P. BURDETTE: All in favor of the motion will say "aye." Contrary, "no." The motion is carried.

RESOLUTIONS:

WHEREAS, We have just learned that Professor Nickolas Schmitz, the State Agronomist, has severed his connections with the Maryland State College of Agriculture, which will take effect on January 1st, 1917.

AND WHEREAS: We very much regret that he is leaving the State of Maryland and it is our earnest hope and desire that his new work with the Pennsylvania State College will prove as beneficial and successful as his stay with the Maryland State College of Agriculture has been.

AND WHEREAS: During his stay with us he has fulfilled his duties conscientiously and successfully.

THEREFORE: We part with him with much regret and sincerely wish him Godspeed in his new field of labor.

W. OSCAR COLLIER,
JAS. R. GALBREATH.

The resolution was adopted.

PRESIDENT J. P. BURDETTE: Now the committee on nominations. Mr. Twining.

MR. TWINING: Mr. Chairman, the Nominating Committee, consisting of Mr. Howard Mann, and Mr. Porter, of the Eastern Shore, and myself, respectfully submit the following: For President we have named this year's Vice-President, Mr. Fred Wright, of East New Market; Vice-President, John H. Drury, Chaney; and for Secretary-Treasurer,—I intended to see Professor Schmitz again,—he recommended a man in the same line of work as himself, Mr. William B. Kemp. I was thinking of leaving Mr. Schmitz's name there as Secretary and Treasurer, with Mr. Kemp as Assistant. For mem-

bers of the Executive Committee we have selected Dr. H. J. Patterson, College Park; Mr. T. M. Maynadier, Baltimore; and R. Lee Dutrow, Adamstown.

PRESIDENT J. P. BURDETTE: You have heard the report of the Nominating Committee.

MR. W. IRVING WALKER: I move that the report of the committee be accepted.

A MEMBER: Second it.

PRESIDENT J. P. BURDETTE: Are you ready for the question?

A MEMBER: Question.

PRESIDENT J. P. BURDETTE: Those in favor of the motion will say "aye." Contrary, "no." The motion is carried. That will carry the election of the officers if there is no objection.

Is there any other business now to come before the Association?

The meeting then adjourned.

TWENTY YEARS' FERTILIZER EXPERIMENTS.

By C. G. WILLIAMS, Agronomist, Ohio Experiment Station.

Mr. Chairman and Gentlemen:

What is there of greater importance in this world than the maintenance and the improvement of the fertility of our soil, the "Divine soil," as John Burroughs has called it? I have been asked to present to you this afternoon the fertility experiments of the Ohio Experiment Station. Now, I do not expect, neither shall I attempt, to solve all the problems having to do with soil fertility. It is too big a question to solve in one hour. Neither do I expect that everything which we have found true in Ohio will apply in Maryland. Yet, the more I study the work of all of our experiment stations in this country,—and you know we have over a half a hundred of them now,—and even the experiment stations of Europe, the more I am surprised at their general agreement. It is almost marvelous how closely their results agree.

Now I want, in the first place, to call your attention to what a good rotation system means in economic production of

crops. We have, at the Ohio Station, small areas that have been planted continuously for some twenty-three years now in our principal cereal crops of the Middle West. We have corn that has been grown continuously for twenty odd years, and on very similar land, only a few rods away, we have corn which has been grown in a five years' rotation of corn, oats, wheat, clover and Timothy, and also corn grown in a three years' rotation of corn, wheat and clover. Some of this land has been farmed in these three systems without any treatment whatsoever in the way of manure or fertilizers. Let us see how they have yielded.

OHIO AGRICULTURAL EXPERIMENT STATION.

The Relation of Crop Rotation to Production.

CORN YIELDS ON UNFERTILIZED LAND.

SYSTEM	TREATMENT	AVERAGE YIELD PER ACRE—BUS.		
		Twenty Years	First Ten Years	Second Ten Years
Continuous.....	None	15.47	21.51	9.44
Five-year rotation....	None	28.95	31.35	25.68
Three-year rotation...	None	35.19	36.99	32.87
ON MANURED LAND.				
Continuous.....	5 T. per acre	37.02	41.62	32.42
Five-year rotation....	3⅓ T. per acre	51.81	45.13	57.79
Three-year rotation...	2⅔ T. per acre	60.20	57.13	64.14

The continuous corn year after year, without any fertilizers or manures, has averaged 15.47 bushels per acre as a twenty year average. Corn grown in the five-year rotation—we have five different areas in this rotation, so that we have a corn crop every year has averaged 28.95 bushels per acre. In the three years' rotation of corn, wheat and clover, where we would get a clover crop, once in three years, instead of once in five years, without any treatment of fertilizers or manures, the yield has averaged 35.19 bushels, or more than double what it did in continuous cropping.

The effect of the rotation system, however, is brought out more clearly if we divide this twenty year period into two periods of ten years each. We can see what is happening a

Ohio Agricultural Experiment Station.

FIVE-YEAR ROTATION FERTILITY WORK.

Treatment Per Rotation	Twenty-Year Average Per Acre Per Rotation.			Percent. on Investment
	Value of Increase	Cost of Fertilizers	Net Return Over Cost	
Acid Phosphate.....320*	$17.76	$2.24	$15.52	692.7
Muriate of Potash.....260	6.08	6.50	.42	6.5
Nitrate of Soda.....480	9.18	14.40	5.22	36.2
Acid Phosphate.....320 Nitrate of Soda.....480	33.98	16.64	17.34	N 12.6
Acid Phosphate.....320 Muriate of Potash.....260	26.67	8.74	17.93	K 37.1
Muriate of Potash.....260 Nitrate of Soda.....480	11.78	20.90	9.12	43.6
Acid Phosphate.....320 Muriate of Potash.....260 Nitrate of Soda.....480	41.95	23.14	18.81	N K 15.7
Acid Phosphate.....480 Muriate of Potash.....260 Nitrate of Soda.....240	37.77	17.06	20.71	.....
Manure.....16 T.	44.63	2.79(2)	.....	.....

Unfertilized, Total Yield	Corn	Oats	Wheat	Clover	Timothy
	28.95	30.03	10.70	1.813	2.622

Corn, 50c; Oats, 33⅓; Wheat, 90c; Hay, $10.00.

little better. The continuous corn, without treatment, the first ten years averaged 21½ bushels, whereas the second ten years it has averaged 9.4 bushels, a drop of considerably more than fifty per cent. There has been a drop in the five year rotation where we have not used any manure or fertilizers, but not so great a drop,—31.35 for the first ten, 25.68 for the second, and there has been a drop in the three year rotation. We can't get something for nothing in this world, but you note that we are getting three times as large a yield in this three year rotation in the second ten years as we are getting in the continuous cropping. But these yields are nothing to brag about. We must have larger yields.

I want to call your attention next to what has happened where we have manured the land in these three systems. The continuous corn has had five tons of manure every year for the entire twenty years, and the yield has been 37 bushels

per acre. In the five year rotation we do not have any plots that get as much manure as five tons per year on the average. Our best manured plot gets on the average 3 1/5 tons of manure, but you note that the yield rises from 37 bushels to 51.8 bushels. In the three year rotation the manure averages still less,—only 2 2/3 tons per acre per year, but the yield, instead of being 37 bushels, is 60.2 bushels, as a twenty year average.

Now, if we divide this twenty years into two equal periods of ten years each, we see more definitely what is happening and what rotation means. In the continuous cropping, in spite of the fact that five tons of manure is used each year, the second half the yield is 32.4 bushels, as compared with 41.6 bushels the first half, a decided decline, but in the five year rotation, with less manure per acre, the yield is not declining. It is rising from the average of 45.1 bushels per acre the first ten years to an average of 57.8 bushels, and in the three year rotation, with still less manure per acre, 57.1 bushels for the first ten, and 64.1 bushels for the second ten.

I am not here to say that crops cannot be grown in continuous culture. Under certain conditions, they should be grown, probably, in continuous culture. If I had a dairy farm with a very limited acreage and I had a nice field handy to my silo, I would probably grow silage corn there every year, but I would do it with the knowledge that it was costing me a little more in the way of fertility. It does cost one more, but if he is farming intensively, buying lots of grain, he possibly can afford to do it.

A MEMBER: Tell us how you treat that.

PROF. C. G. WILLIAMS: Well, I don't know whether I had better run off on these side lines or not. I may answer the most of your questions before I get through. If I do not and the chairman will give me time, I will do my very best to answer all you have a mind to fire at me after the talk is over.

A MEMBER: I would like to ask if everything is taken off except the corn.

PROF. C. G. WILLIAMS: Everything is taken off; nothing left except the clover and the roots.

I want, next, to call your attention to the use of commercial fertilizers in our work at the Ohio Station. These fertilizers in this particular test are used in the five year rotation of corn, oats, wheat, clover and timothy. We have five ranges of thirty plots each. One-third of all of these plots are farmed without any fertilizer, and two plots in between each pair of "checks," as we call them, are fertilized in different ways, and we compare these fertilized plots with the untreated plots on either side to determine what increase the fertilizer has given us.

We have a series of plots that bear No. 2, which receive and have received in these twenty years nothing except acid phosphate. They get 320 pounds of acid phosphate during the rotation of five years. This acid phosphate is applied to the cereal crops—the corn, oats and wheat. The clover year and the timothy year nothing is applied. Now, what have we received for that 320 pounds of acid phosphate, on the average, for the twenty year period? We have received a certain increase of corn, something like seven bushels per acre. We received a certain increase in all the crops which, if we value the corn at 50c per bushel, the oats at 33 1/3c, wheat at 90c and hay at $10.00 we have a return of 17.76 for the investment in acid phosphate.—I expect these prices look pretty low to you here,—they are low in Ohio,—but we prefer to value low so as not to give any sort of fictitious value to these fertilizers. The acid phosphate cost $2.24, applied. That is $14 a ton for fourteen per cent. acid phosphate. If we subtract the cost of the fertilizer from the increase in the crop which we secured as a result of using that fertilizer, we have $15.52.

On plot three in each series we have used muriate of potash, an average of 260 pounds per acre,—nothing else. You note that our land does not respond to potash like it does to acid phosphate. The total value of the increase for that period has been only $6.08. The potash cost us $6.50, applied. Of course, these figures are "before war" figures. There is nothing left, you see. In fact, there is a hole in the corner of the pocketbook and forty-two cents have slipped away from us.

How about plot five, where we have used nitrogen in the form of nitrate of soda at the rate of 480 pounds per acre per rotation? This does not show up with phosphorous. Instead of an increase in crop worth $17.76, we have only $9.18, and if we look at the cost of this nitrate of soda we see it has cost $14.40 instead of $2.24, and we are out of pocket $5.22 as a result of using nitrogen alone, on that soil. Remember that word "alone."

Now, we will combine these carriers of fertilizers and see what happens then. We will take this same amount of acid phosphate that we have used on plot 2, and put it with the same amount of nitrate of soda that we used on plot 5, and we will put them both on plot 6. Lo, and behold, the nitrogen does something now! We are getting larger yields. Instead of an increase worth $17, we have an increase worth $33.98. It is true we have greatly increased the cost of fertilizer per acre as compared with plot 2. We are using $16.64 worth per acre, but subtract it from the increase and we still have a little profit for the use of that nitrogen. Instead of $15.52, we have $17.34.

Well, let's put potash with phosphorous on plot 8 and see what we get. We get a return of $17.76 for phosphorous alone; for phosphorous and potash, $26.67. The net profit above the cost of the fertilizer, you will note is $17.93.

A MEMBER: Can I ask one question?

PROF. C. G. WILLIAMS: Yes, sir.

A MEMBER: What per cent is that acid phosphate?

PROF. C. G. WILLIAMS: Fourteen per cent.

A MEMBER: What would sixteen have done?

PROF. C. G. WILLIAMS: It would have done a little better. I do not think we are putting on as much phosphorous as is wise, but it is not a wise plan to change the treatment every year or two. We started in using this amount and I think we should continue, but on other parts of the experiment farm we are using larger amounts. You see that by combining phosphorous with either potash or nitrogen we increase our yields and even our net profit per acre.

Now, let us put the potassium and the nitrogen together and see what happens. On plot 9 we have the muriate of

potash and the nitrate of soda, and we have a pretty expensive fertilizer, $20.90 per acre, the most per acre of anything that I have called your attention to yet, but the return isn't there. That twenty dollars, almost twenty-one dollars' worth of nitrogen and potassium doesn't begin to give the increase of crop that $2.24 worth of acid phosphate gives, and we have a loss of $9.12 as the result of its use.

To this very unprofitable plot 9 which receives muriate of potash to the amount of 260 pounds, nitrate of soda to the amount of 480 pounds per acre, let us add this little paltry $2.24 worth of acid phosphate and see what happens! We do this on plot 11, and, instead of an increase of crop worth $11, we have an increase of crop worth $41.95. That difference is due to the phosphorous. And, instead of a loss of $9, we have a gain of $18.81, the best net return over cost of fertilizer, in spite of the fact that we are using $23.14 worth of fertilizer per acre per rotation. A little the best net profit yet.

On plot 17 we use the same fertilizers, only in different proportions. The acid phosphate is increased fifty per cent, and the nitrate of soda is reduced fifty per cent. While the increase of crop is not so great as on 11,—it is $4 behind, you notice,—the cost of the fertilizer is considerably lower. Acid phosphate is cheaper than nitrate of soda; in other words, when we subtract the cost of fertilizers used on plot 17 from the value of the increase, we have, instead of $18.81, $20.71, indicating plainly that we have not used quite enough phosphorous.

We have one other plot, 18, to which I wish to call your attention. This is the plot that gets sixteen tons of manure, and you notice that it has produced the largest yields of any plot in the series, the value of the increase over the unfertilized plots being $44.63. That would pay $2.79 for each ton of manure used.

The unfertilized yield of this whole series is about 29 bushels of corn, 30 bushels of oats, 10.7 bushels of wheat, 1800 pounds of clover and 2600 pounds of timothy.

In the final column of the table we have something that may interest you a moment, and that is the per cent. of profit

on the investment in fertilizers. If we invest $2.24 in acid phosphate and get our money back for that fertilizer, and, on top of it, $15.52 we are getting pretty good per cent. It figures 692.7 per cent. I do not suppose any of your banks in Maryland are paying that interest, but this bank of the soil will pay it in phosphorous-hungry soil, and there is mighty little soil in the United States that is not phosphorous-hungry. Some of it wants other things too, but most of it wants phosphorous. On the money invested in phosphorous we have 692 per cent. On the money invested in potash alone we have a minus six per cent. That is, we lost 6.5 per cent on every dollar invested in potash used alone. On every dollar invested in nitrogen used alone we lost 36.2 per cent. Now, this nitrogen, when used with phosphorous, did earn us some money. Plot 6, on which we used acid phosphate and nitrate of soda, gave a net return of $17.34. If we credit the acid phosphate with doing here what it did alone, we will have a little less than two dollars to the credit of the nitrogen, and that will be 12.6 per cent., on the money invested in nitrogen. Twelve per cent is quite different from 692 per cent, but after a man had invested all the money he could at 600 per cent, he might be glad to invest a little at 12 per cent. I presume some of you are investing it at four or five per cent.

On plot 8, where we get a net return of $17.94 for phosphorous and potash, crediting phosphorous with doing what it did alone, we have 37.1 per cent that we can credit to potash. That is better than the 12 per cent. Where we use nitrogen and potassium together, there is a loss of 43 per cent.

On plot 11, where we used the complete fertilizer, after we credit the phosphorous with what it did alone, we have a profit of 15.7 per cent to credit to nitrogen and potash.

Now, is there any question on this chart that I haven't made plain to you?

A MEMBER: What would the analysis of plot 17 be? Do you know?

PROF. C. G. WILLIAMS: I can't give that exactly now, but it will run around 4 per cent of nitrogen, 7 per cent of phosphoric acid, and 10 per cent of potash.

A MEMBER: What do you consider a liberal application of fertilizer, say, a 2-8-4? For a crop of wheat?

PROF. C. G. WILLIAMS: I would call three to four hundred a pretty good application.

A MEMBER: Well, we generally use six. Now, the question is,—a sponge won't hold but just so much water, and the plant won't absorb but just so much plant food.

PROF. C. G. WILLIAMS: Nitrogen will get away from you in a hurry if it is not used, but phosphorous and potassium are absorbed pretty well by the soil.

As to amounts per acre. I am away under, I know. In the East you use more fertilizers than we do. With us, three to four hundred pounds per acre is a very liberal application for wheat. I would not undertake to specify amounts here. Consult your own Experiment Station for your particular local problems.

A MEMBER: What class of manure are you using?

PROF. C. G. WILLIAMS: This is cow manure.

A MEMBER: Could you get $2.79 a ton for the sixteen tons?

PROF. C. G. WILLIAMS: What I mean is this: We got an increase of crop for those sixteen tons of manure which, if valued at 50c for corn, 33 1/3 for oats, etc., would make the manure worth $2.79 per ton in this experiment.

A MEMBER: One more question. There are soils that potash doesn't seem to operate on a paying basis.

PROF. C. G. WILLIAMS: Yes, sir.

A MEMBER: .Well, in lieu of that, isn't it more economical and a more judicious investment to invest in a 2-8-4 composition?

PROF. C. G. WILLIAMS: Using less potash, you mean?

A MEMBER: Yes, sir.

PROF. C. G. WILLIAMS: Yes, sir, that is true. At the present prices, we have simply got to omit potash, and we may learn that we can get along with less potash. Normal soil carries thirty times as much potassium as it does of phosphorous, but it is locked up in very insoluble compounds, and in certain types of farming it will pay exceedingly well to supply some available potash. We can not make it available fast enough in

some sorts of farming, but, of course, the use of it is practically out of the question now. The last I noticed, it was four hundred dollars a ton. I don't know whether it can be had at any price now.

Before I turn this chart I want to call your attention to two outstanding things.

A MEMBER: Is this an annual application?

PROF. C. G. WILLIAMS: No, sir; per rotation of five years.

A MEMBER: Do you use that quantity each year?

PROF. C. G. WILLIAMS: No; it gets 320 pounds of acid phosphate in the five years. It is a small application, you see, but the results are pretty good.

The two things that I want you to note and carry along with you are these. The great profit from the use of the phosphorous,—the great profit on the investment, and the large yield from the manure. The weak thing about the use of this amount of phosphorous is the fact that the yields are not high enough. It is not everything to get a great big rate of interest on a five-cent investment. That is not the big thing in life. You want to invest a little more and get a larger return per acre. Looking down through the chart you will note that larger increases from the complete fertilizers but the trouble is the margin of profit is rather close. If we could somehow combine this great big margin of profit from the use of acid phosphate with the large yield from the manure, we would be in pretty good shape.

A MEMBER: Could you tell us, Doctor, please, how that first one was kept up in the two years?

PROF. C. G. WILLIAMS: The last five years are better than the first five years. The yields are keeping up very well.

I want now to call your attention to some tests with manure and manure reinforced with phosphorous. This test is in a three years' rotation of corn, wheat and clover. The corn crop receives the manure and the phosphorous if any is applied. Nothing is applied to the wheat or to the clover. We have a set of plots that receive what we term "yard" manure. That means manure that is dumped or hauled out of the barn into the yard and allowed to take a three or four month's vacation before it is spread on the land. Then we

have what we call "stall" manure, manure which is hauled direct from the stable as it is made, sometimes every day; sometimes, when we are feeding cattle in large box stalls, once a month; with the dairy cattle, of course, we can't do that, but hauled directly from the stalls to the fields. I have these results divided into two periods of nine years and eight years. We could not make an even division of the seventeen years.

Ohio Agricultural Experiment Station.

THREE-YEAR ROTATION—MANURE TEST.

AVERAGE VALUE OF INCREASE PER ACRE BY PERIODS.

TREATMENT PER ACRE, PER ROTATION.	AVERAGE NET VALUE OF INCREASE PER ROTATION.			
	First Period, Nine Years		Second Period, Eight Years	
	Per Acre	Per Ton Manure	Per Acre	Per Ton Manure
Yard Manure .....8 T.	$17.91	$2.24	$26.46	$3.31
Stall Manure.....8 T.	24.40	3.05	32.23	4.03
Gain for Stall Manure.....	6.49	.81	5.77	.72
Stall Manure.....8 T. Floats.....320*	36.64	4.58	39.58	4.95
Stall Manure.....8 T. Acid Phosphate.....320*	38.53	4.82	47.76	5.97
Gain for Floats.....	12.24	765.0%	7.35	459.4%
Gain for Acid Phosphate.....	14.13	630.8%	15.53	693.3%
Average value of "nothing" plots....	37.69	.....	46.00	.....

Floats, $10.00 per ton, applied ($1.60 per acre).
Acid Phosphate, $14.00 per ton, applied ($2.24 per acre).

From the 8 tons of yard manure, as used during the first period of nine years, we have a net increase per acre of $17.91. That is valuing the crops at the same prices I gave you a little bit ago. That means, for each ton of yard manure we have received $2.24. For each ton of stall manure we have received $3.05, the stall manure giving eighty-one cents greater profit per ton than the other.

Now, we have taken this stall manure and mixed two different carriers of phosphorous with it. In one instance we have used 320 pounds of the "floats," or raw rock phosphate, and in the other the same number of pounds of acid phosphate. You note that during the first period we received

$36.64 per acre from the floats treated manure, or $4.58 per ton. From the acid phosphate treated manure we received $4.82 per ton for the first period. During the second period there is an increase all along the line. The yard manure comes up, the stall manure, the manure treated with floats, but you will note that the increase from the manure and floats is less than any of the others. For the first period we have a return of $4.58 for each ton of manure treated with floats. That is after deducting the cost of the floats. The second period we have only $4.95, whereas with the acid phosphate it increases from $4.82 to $5.97. Part of that increase is due to manure and part to the phosphorous. If we subtract what the stall manure did alone from what the stall manure did when reinforced with floats, we ought to get what the floats did, and here you have it. In the first period we have $12.24 that we can credit to the floats. Making the same subtraction in the case of the acid phosphate and stall manure, we have $14.13 that we can credit to the acid phosphate. The acid phosphate is a little ahead. This is net, you understand. But here is the surprising thing. When we make this same subtraction for the second period we see that the floats is not holding up. We have only $7.35 that we can credit to the floats, whereas the acid phosphate has held up. It has added to this $14.13, making $15.53. If we determine the percentage of profit, we find that during the first period the investment of $1.60 in floats yields a profit of 765 per cent., while the $2.24 invested in acid phosphate yields 631 per cent. During the second period the floats drops to 459 per cent, while the acid phosphate advances to 693 per cent.

A MEMBER: How do you account for that difference?

PROF. C. G. WILLIAMS: Well, it is a pretty hard thing to account for. Evidently, that floats isn't yielding up its plant food. Theoretically, I think most people would have expected the floats to have increased its lead the second period. I know that is what I expected would happen. Of course, if we apply the same number of pounds of material, we are applying twice as much phosphorous in the floats as we are in the acid phosphate, and we might assume that that would

gradually become more available, but evidently it has not in this period of seventeen years. We have got to look further into the future. Maybe our children—if not our children, maybe our grandchildren,—will reap results.

A MEMBER: Floats is the ground rock, is it?

PROF. C. G. WILLIAMS: Yes, sir, the ground, raw rock.

A MEMBER: Professor Williams, have you a plot there where you add more manure with that same amount of floats. The question is whether, in that rotation, you have enough organic matter in the three years.

PROF. C. G. WILLIAMS: No, we have eight tons in the three years. That is the most we have.

OHIO AGRICULTURAL EXPERIMENT STATION.

The Effect of Lime on Acid Soils. Five-year rotation.

AVERAGE OF TWELVE YEARS' WORK.

PLOT	TREATMENT	UNLIMED			LIMED			Gain for Lime per Acre for one Rotation
		lbs. Clover	lbs. Timothy	Value of all Crops of the Rotation	lbs. Clover	lbs. Timothy	Value of all Crops of the Rotation	
2	Phosphorus	1.554	2.992	$72.67	2.250	3.934	$88.53	$15.86
8	Phosphorus, Potassium	2.286	2.982	81.96	3.476	4.008	100.47	18.51
11	Phosphorus, Potassium, Nitrogen	2.796	3.507	100.21	3.631	4.389	111.57	11.36
17	All three, plus extra Phosphorus	2.596	3.197	93.75	3.842	4.635	113.30	19.55
24	Same. N. in Sulfate of Ammonia	2.256	2.923	85.24	3.736	4.617	113.20	27.96
26	Same. P. in Bone Meal	3.135	3.436	94.20	3.981	4.876	110.35	16.15
29	Same. P. in basis slag	3.072	3.837	99.20	3.579	4.567	105.42	6.22
18	Yard Manure	3.582	4.470	107.85	4.708	5.742	126.37	18.52
	Unfertilized	1.409	2.512	53.13	1.983	3.225	66.73	13.60

A MEMBER: Is that land acid?

PROF. C. G. WILLIAMS: Yes, sir.

A MEMBER: So it is a place where the floats are supposed to do their best?

PROF. C. G. WILLIAMS: Yes, sir, this land is acid, and we are going to talk about that in a minute.

Now, those of you who were in when my talk began know that we have considered the effect of a proper rotation system in productive farming, the use of fertilizers, and the use and reinforcement of manures. "What more must we do to be saved?"

Well, in Ohio we have got to use some lime, and pretty generally over the country on the older cultivated soils. A portion of the fertility plots in our five year rotation test has been limed regularly since 1900. Let us take the last twelve years of the five year rotation work and compare the limed halves of the plots with the unlimed. I could not, on a chart of this size, record the yield of all the crops of the rotation, so I have put down the yields of clover and timothy, for these are the crops which suffer worst from a shortage of lime. Plot 2, which is the acid phosphate plot, you remember, has averaged, for the twelve years 1,554 pounds of clover hay per acre on the unlimed half. On the limed half this same plot has averaged, the same seasons, 2,250 pounds of clover. The unlimed acid phosphate plot has yielded 2,992 pounds of timothy hay. On the limed half, 3,934.

Let us consider plot 8, which receives acid phosphate and muriate of potash, phosphorous and potassium. It will be noted that the yields of clover are larger than from phosphorous alone. Clover is hungry for potash, and we get 2,286 pounds on the unlimed half. On the limed, the yield rises from 2,286 to 3,476. Evidently it wants lime. The timothy wants lime also. From 2,982 pounds per acre, it rises to a little more than two tons per acre.

On plot 11, which gets all three elements, phosphorous, potassium and nitrogen, we get more clover on the unlimed portion than from phosphorous and potassium alone. The nitrogen has increased the yield of clover from 2,286 pounds on plot 8, to 2,796 pounds. Does it want lime? To be sure. It increases the yield from 2,796 pounds to 3,631 pounds.

Plot 17 gets all three elements the same as 11, but an extra amount of phosphorous, with a diminished amount of nitrogen. It yields 2,596 on the unlimed. On the limed, 3,842. Why do you suppose plot 17 gives less clover on the unlimed than 11, but more on the limed than 11? Possibly from the

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Let us consider plot 8, which receives acid phosphate and muriate of potash, phosphorous and potassium. It will be noted that the yields of clover are larger than from phosphorous alone. Clover is hungry for potash, and we get 2,286 pounds on the unlimed half. On the limed, the yield rises from 2,286 to 3,476. Evidently it wants lime. The timothy wants lime also. From 2,982 pounds per acre, it rises to a little more than two tons per acre.

On plot 11, which gets all three elements, phosphorous, potassium and nitrogen, we get more clover on the unlimed portion than from phosphorous and potassium alone. The nitrogen has increased the yield of clover from 2,286 pounds on plot 8, to 2,796 pounds. Does it want lime? To be sure. It increases the yield from 2,796 pounds to 3,631 pounds.

Plot 17 gets all three elements the same as 11, but an extra amount of phosphorous, with a diminished amount of nitrogen. It yields 2,596 on the unlimed. On the limed, 3,842. Why do you suppose plot 17 gives less clover on the unlimed than 11, but more on the limed than 11? Possibly from the

PRIZE-WINNING CORN, 1916

SPECIAL BOOTH EXHIBIT BY FOLLY QUARTERS FARM
(150 Different Farm Products)

fact that plot 11 receives more nitrate of soda than 17, and nitrate of soda, uniformly, in all this work, is favorable to an acid soil; a basic property, you see, in the sodium, and when this shortage is made good by the lime then we get the full benefit for that extra amount of phosphorous, which puts 17 above 11.

Plot 24 is the same as 17, except that its nitrogen is furnished by sulphate of ammonia. You have heard, probably that sulphate of ammonia tends to increase the acidity of the soil. It looks like it, does it not? The plot which receives sulphate of ammonia—the same amount of nitrogen that plot 17 receives—is considerably reduced in yield, both in the clover and the timothy, but when properly limed, the yield rises very close to that of the plot receiving nitrate of soda.

Plot 26 is the same as 11, except that the phosphorous is carried by bone instead of acid phosphate. Apparently if one is not going to lime, he will get more clover if he uses bone as a carrier of phosphorous than if he uses acid phosphate. But taking into consideration all the crops of the rotation, acid phosphate is slightly ahead.

One other plot I want to call your attention to, plot 29. It gets this same complete fertilizer as 11 and 26, but a different carrier of phosphorous, namely, basic slag. Now, what happens? What sort of a carrier of phosphorous is basic slag? Well, if we look to the clover on unlimed land that is acid, we see it is a pretty good carrier, do we not? Almost "neck and neck" with bone as to clover yield, and ahead as to timothy. But it is evident that basic slag will not take the place of lime. One would have to buy a lot of basic slag in order to sweeten an acid soil. If one is going to lime anyway, is the basic slag of any particular advantage? It will be noted that the limed half of the basic slag plot is below any of the others receiving a complete fertilizer, evidently meaning that basic slag, while it is of advantage over the acid phosphate on acid soil if no lime is used, is not as valuable a carrier of phosphorous as the others where the acidity of the soil is taken care of.

Yard manure has given us the largest yield on the unlimed land of any treatment; the largest yield of clover and the

largest yield of timothy by far. Does it need lime? Will manure take the place of lime on acid soils? No, for this good yield of 3,582 pounds of clover is raised to 4,708 pounds, and the yield of timothy is raised from 4,470 to 5,742. If one is farming on acid soil, there is absolutely nothing he can use, within the region of common sense and his pocketbook—nothing he can use to take the place of the lime.

A MEMBER: What form of lime do you use? Limestone, or ground lime, or what?

PROF. C. G. WILLIAMS: We are getting as good, or a trifle better, results from the raw limestone than from the burned lime, slaked or unslaked, or the air slaked. Just the ground raw limestone.

A MEMBER: Do you ever use more of the raw lime?

PROF. C. G. WILLIAMS: Yes, use equivalent amounts of calcium, which will mean some 3,600 pounds of raw limestone for 2,000 pounds of burned lime (unslaked).

A MEMBER: Do you mean larger production or larger profit?

PROF. C. G. WILLIAMS: Both; slightly larger of both.

A MEMBER: Is the expense greater?

PROF. C. G. WILLIAMS: In most localities in Ohio one can buy equivalent amounts of calcium in raw limestone a little cheaper than he can in burned lime. The price ranges from fifty cents up to $1.50 a ton at the factories, depending on the fineness, with freight added.

A MEMBER: Isn't it a fact that if it isn't real fine it isn't any good?

PROF. C. G. WILLIAMS: You want a portion real fine, but not all of it need be real fine. It dissolves very readily in soil water. If it would all go through a 100 mesh sieve it would be a disadvantage, but I think we ought to have twenty-five to thirty-five per cent of the lime go through a 100 mesh sieve, and then, of the balance, say 50 per cent through a 50 mesh and practically all of it through a 10 mesh sieve. It is sometimes profitable to use a limestone some of which will not pass a 10 mesh sieve, providing the price warrants it.

A MEMBER: What about burned shell lime?

PROF. C. G. WILLIAMS: Well, I suppose what is true of the ground limestone, as compared with the burned lime, would be practically true of your ground raw shell and the burned shell, would it not?

A MEMBER: Yes, sir.

PROF. C. G. WILLIAMS: We have never used shell lime.

PROF. N. SCHMITZ: In our comparisons at the Experiment Station we have gotten the best results with the ground shells. That is all.

PROF. C. G. WILLIAMS: Good stuff, certainly.

A MEMBER: In this work has ground limestone been used all the way through?

PROF. C. G. WILLIAMS: In this particular test that I am reporting, burned lime was used in the first rotation, but since then ground limestone.

A MEMBER: Do you think that was important in improving the physical condition of that land faster than the ground limestone?

PROF. C. G. WILLIAMS: I am not certain. In answering the question as to the comparative value of ground limestone and burned lime, I have had in mind other experiments which were started eleven years ago, in which we compared ground limestone from the start with burned lime, hydrated lime, and so-called air-slaked lime. In the latter work we have kept up the organic matter as we would in good farming. Where we have used manure in the rotation the ground limestone is a little ahead, both in yield and in profit.

A MEMBER: That corresponds to our experiments.

PROF. C. G. WILLIAMS: Yes, sir.

A MEMBER: Was the lime applied before the slag, or afterward?

PROF. C. G. WILLIAMS: The application of lime in this five year rotation test is made after the land has been plowed for corn, the fertilizer being applied a week or so later.

A MEMBER: Then, in the case of the basic slag, you had already done the work with slaked lime which the ten per cent. of free lime in that slag might have done if you had not done it that way.

PROF. C. G. WILLIAMS: Possibly, yet how much could we expect from 65 pounds of basic slag per acre, which is applied to the corn, in the way of correcting acidity? The year following, oats are grown which are also fertilized with basic slag, and the third grows wheat, which receives slag. No limestone precedes either of these treatments. All told, the basic slag plot receives 230 pounds of basic slag during the rotation.

A MEMBER: On the limed part, however, there is no new acid reaction, is there?

PROF. C. G. WILLIAMS: I shall have to report that there is. We have not been using quite enough lime in this test. Even where we have used more lime the soil becomes acid before the fourth year comes. We shall have to apply a little more lime than we have been doing.

A MEMBER: Might I ask how much lime was applied per acre?

PROF. C. G. WILLIAMS: The first round, we used a ton of burned lime per acre. Then the second round, which would be five years later, we used a ton of raw limestone. The third round we used two tons of raw limestone.

A MEMBER: Is there much loss of lime from heavy rainfalls washing away?

PROF. C. G. WILLIAMS: You mean by dissolving?

A MEMBER: Yes.

PROF. C. G. WILLIAMS: There is more or less loss going on. At any rate, the soil is giving an acid reaction. Now, in these tests to which I have called your attention, we have first, emphasized the matter of a rotation system; second, the use of the proper sort of fertilizer; third, the proper care and reinforcement of manure, and finally the use of lime. In none of the work have we combined all of these good practices. We have learned one thing from one set of tests and another thing from another set of experiments.

Ohio Agricultural Experiment Station.

A FORTY-ACRE EXPERIMENT—FOUR-YEAR ROTATION.

Treatment	Ten-Year Average Yield Per Acre				Value per acre, Four Crops
	Corn, bus.	Oats, bus.	Wheat, bus.	Clover, ton.	
Old:					
Ten tons yard manure, on wheat	48.7	52.0	19.5	1.50	$74.23
New:					
Ten tons stall manure, 400 lbs. phosphate, and 1 ton limestone on corn; 350 lbs. of 1-18-5 on wheat	78.7	60.0	34.1	3.39	$123.94
Gain for new treatment	30.0	8.0	14.6	1.89	$49.71

Cost of new treatment, $10.50.

The Extremes in Farming.

TEN-YEAR AVERAGE YIELDS

Crop	Continuous Unfertilized	Four year rotation best treatment
Corn	9.4 bus.	78.7 bus.
Oats	20.0 "	60.0 "
Wheat	5.8 "	34.1 "
Clover	1.409 lbs.	6.780 lbs.
Value of four crops	$18.63	$123.94

Twelve years ago, when we began to see the direction in which these different things were pointing, we took a forty-acre tract of land which had been in experiment work for ten years and for which we had accurate records; a tract of land, which previously had been handled about as the farmers of Wayne County, Ohio, handle land, namely, the manure was saved in the open yard until August and then used to top-dress wheat. That was the old method. No commercial fertilizers were used. We have ten years' records of a forty-acre tract of land that had been handled in this way. Twelve years ago we started a new treatment, and I want to call your attention to the results that we have had where we are getting the good effects of good rotation, well cared for manure instead of yard manure, lime, plenty of

phosphorous, and the wheat crop well fertilized. Under the old treatment, the wheat crop was top-dressed with manure. In the new work we are putting the manure on the corn land during the winter and spring, not allowing it to lie in the barn yard. The rotation followed is that of corn, oats, wheat and clover. The ten years' average yield per acre under the old system was corn, 48.7 bushels; oats, 52 bushels; wheat, 19.5 bushels; clover, 1½ tons. The value of these four crops, figured at the prices I gave you earlier is $74.23 per acre. No credit is given for straw or stover. Under the new treatment, we used the same number of tons of manure, but directly from the stall. It was put on corn instead of wheat, and reinforced with 400 pounds of phosphate, either raw rock phosphate or acid phosphate. Sometimes it has been one and sometimes the other, and, furthermore, one ton of limestone. All of this was put on the corn. The phosphated manure was put on the clover sod and plowed under. Then the limestone was applied. The oats crop was not fertilized, but the wheat received 350 pounds of fertilizer per acre. This was made up of 200 pounds of acid phosphate, 100 pounds of steamed bone, 35 pounds of muriate of potash, and 15 pounds of nitrate of soda. We used a little nitrate of soda in the fall to insure a prompt growth of wheat. If one gets a good fall growth, it will go through the winter in good shape. So much for the treatment, and here are the results: A ten year average yield of 78.7 bushels of corn, 60 bushels of oats, 34.1 bushels of wheat and 3.39 tons of clover hay. The value of these four crops is $123.94. The gain for the new treatment is, corn, 30 bushels, oats, 8 bushels, wheat, 14.6 bushels, clover 1.89 tons, the value of the gain being $49.71.

Now, you will want to know how much this new treatment cost, more than the old. We had the same manure in each case. We shall have to charge up 600 pounds of acid phosphate, a ton of limestone, 100 pounds of steamed bone, 35 pounds of muriate of potash, and 15 pounds of nitrate of soda. At prices prevailing previous to the war, it figures up $10.50. For this expenditure we have a return of $49.71.

A MEMBER: Is that phosphate put on the land direct or on the manure?

PROF. C. G. WILLIAMS: A part of it is mixed with the manure for corn and a part is drilled with the wheat.

A MEMBER: That makes the manure retain more ammonia, doesn't it?

PROF. C. G. WILLIAMS: That is what is popularly supposed to happen, though it is sometimes difficult for the chemist to find more ammonia in the manure. Anyway the results are good in the field. We get a better result when the manure and the phosphorous are mixed, and particularly is it an advantage to mix the raw rock phosphate with the manure.

Now, I have taken, I expect, a good deal more time than you figured that I would. I am practically through, but I do want you to note carefully what I have on the bottom of this chart. I head it: "The extremes in farming." And I want you to understand that we have these extremes right on the Experiment Station farm at Wooster. In our continuous corn, corn, corn, for twenty-two years, during the last ten years of the twenty we have averaged only 9.5 bushels of corn per acre. In the continuous oats we have averaged twenty bushels. In the continuous wheat we have averaged 5.8 bushels. Now, we do not have any clover that is grown continuously like the first three crops, and I have accordingly recorded the unfertilized yield of clover in our five year rotation. The unfertilized, unlimed clover, which has averaged 1,409 pounds per acre. This is one extreme. Figuring the value of these crops on the four acres, we have only $18.63 worth. Considering the best treatment now, we have 78.7 bushels of corn, as compared with 9.4 bushels: 60 bushels of oats, as compared with 20 bushels; 34.1 bushels of wheat, as compared with 5.8 bushels, and 6,780 pounds of clover, as compared with 1,409 pounds, or $123.94, as compared with $18.63.

Can a man afford to farm right? I think he can. If he worked after the first plan he would have to run over 6 2/3 acres to get the bushels and tonnage that he would get from one acre handled after the second plan. Now, I do not want to leave the impression that any farmer can grow 78 or 80 bushels of corn every year. Nature has something to say

about that, and one year he may get 100 bushels; while the next year, under unfavorable conditions he may drop to 60 bushels. A farmer can not strike twelve all the time. There are two roads that confront him. One of them leads in the direction of 10 bushels-to-the-acre corn, and 4 bushels wheat; the other toward 100 bushels corn and 40 bushels wheat. And the thought I want to leave with you this afternoon is simply this: Which of these roads are you taking? (Applause.)

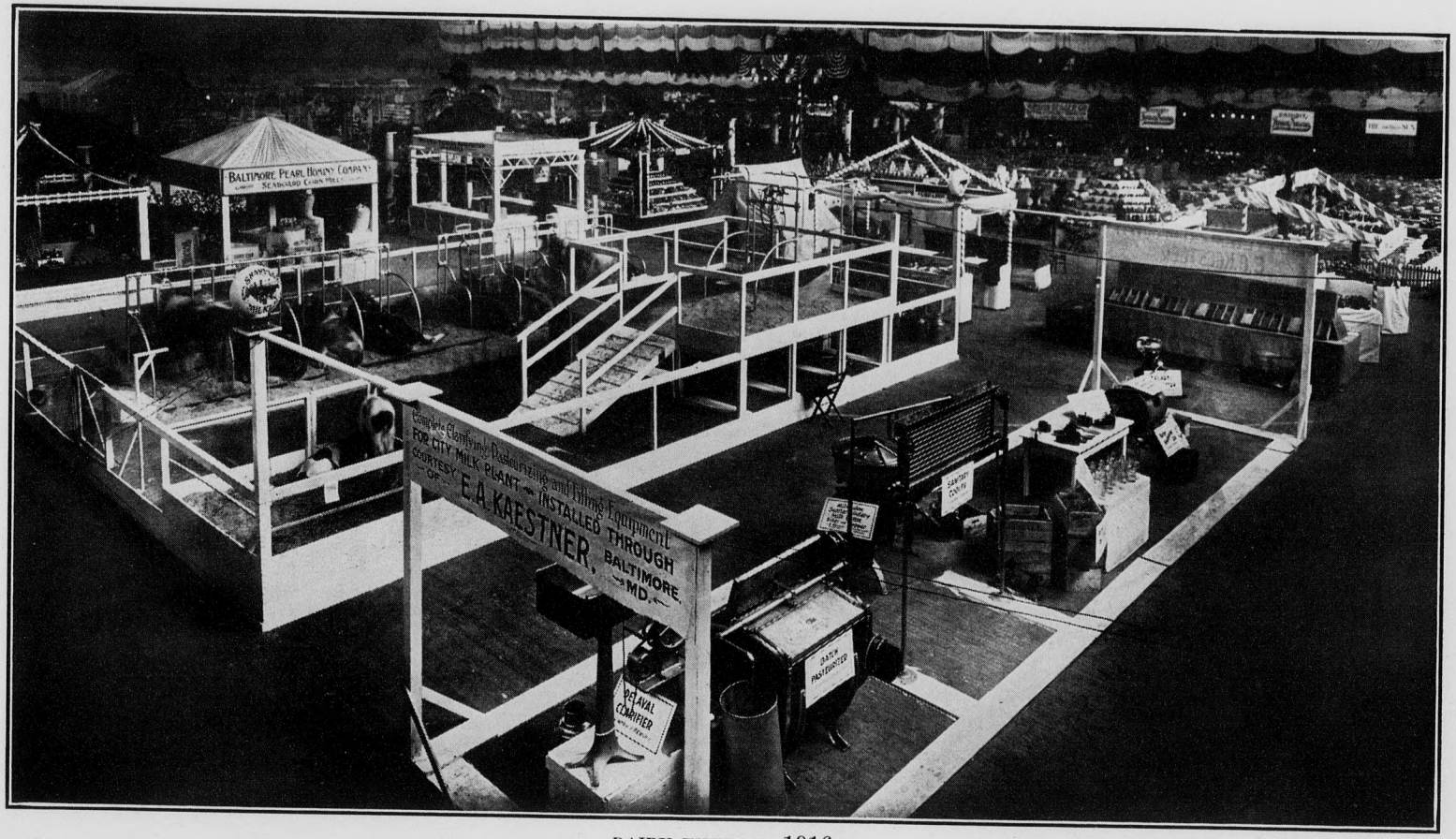
PRESIDENT HOWARD MANN: Gentlemen, while this subject is open for discussion, if anybody would like to ask questions—

A MEMBER: Is this farm the same soil as your other experimental plots, this forty acres?

PROF. C. G. WILLIAMS: Yes, sir, the same thing. It is only a few rods away, and originally it was identical.

REPORT OF TREASURER N. SCHMITZ.

Balance on hand November 18, 1915	$ 249.11
Receipts from dues	269.00
State appropriation (Rcd from Hort. Soc.)	500.00
Received from Baltimore Chamber of Commerce	175.00
Receipts from grain sales	10.04
Total Receipts	$1,203.15
Disbursements	$1,004.43
Balance on hand November 11, 1916	$ 198.72



DAIRY EXHIBIT, 1916

REPORT

OF THE

MARYLAND STATE DAIRYMEN'S ASSOCIATION

ELEVENTH ANNUAL MEETING

FRIDAY, NOVEMBER 17th, at 11 A. M.

PRESIDENT JOHN M. DENNIS: Ladies and Gentlemen, please come to order. This is the Seventh Annual Meeting of the State Dairymen's Association. We will now have the report of the Secretary.

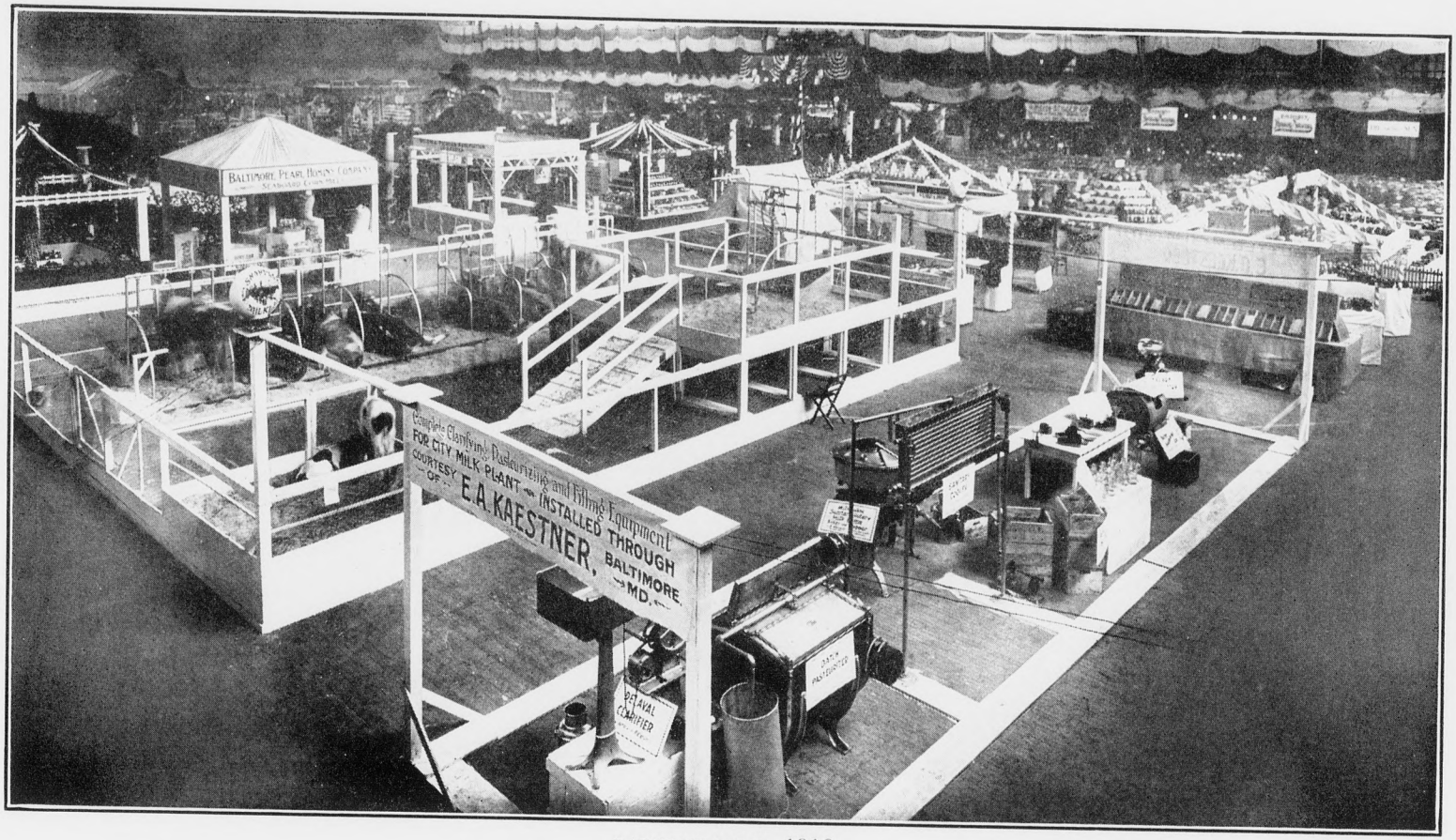
REPORT OF THE SECRETARY.

The regular annual meeting of the Maryland State Dairymen's Association, was held in 5th Regiment Armory, Baltimore, Maryland, November 19, 1915. The meeting was called to order by President S. M. Shoemaker at 11.00 A. M. The minutes of the previous meeting were read and approved.

The following men were appointed by the President at the Nominating Committee—Dr. R. S. Hill, Messrs. Gladden Davis and R. H. Ruffner.

The following awards were announced:

WINNERS OF THE OPEN CLASS.		WINNERS OF THE NOVICE CLASS.	
1st—H. Wilson Wheeler	$25.00	1st—D. G. Harry	$25.00
2nd—H. G. Englar	15.00	2nd—J. W. Neikirk	15.00
3rd—Joseph Belt	10.00	3rd—G. E. Hawkins	10.00
4th—J. W. Beachman	5.00	4th—W. H. Dietrich	5.00
5th—D. A. Bay	5.00	5th—J. J. George	5.00
6th—S. R. Bacon	5.00	6th—Joseph Hunt	5.00


BALTIMORE PEARL HOMINY COMPANY
Complete Clarifying, Pasteurizing and Filling Equipment
FOR CITY MILK PLANT INSTALLED THROUGH
COURTESY OF E.A. KAESTNER, BALTIMORE MD.
DAIRY EXHIBIT, 1916

REPORT

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6th—S. R. Bacon.....	5.00	6th—Joseph Hunt.....	5.00

A prize of $50.00 offered to the person who promoted and assisted in organizing the first new cow-testing association in Maryland during the year 1914 was awarded to Mr. D. G. Harry of Pylesville, Maryland.

A prize of $50.00 offered to the tester of any cow-testing association of Maryland proving himself to be the most efficient tester was awarded to J. L. Holcombe of the First Harford County Cow-testing Association.

Mr. E. A. Grombacher of the American Jersey Cattle Club spoke on the importance of testing and weighing the milk from each cow. He urged the farmers to promote and join Cow-testing Associations and cited many advantages of having such organizations. At the conclusion of Mr. Grombacher's address our President commented at some length, encouraging dairymen to keep records of their cows.

Mr. Bishop, Assistant Secretary of the American Guernsey Cattle Club, addressed the meeting on the subject of—Are you satisfied with what you are getting from your dairy cattle? At the conclusion of Mr. Bishop's address President Shoemaker called for the report of the nominating committee which was as follows: President John M. Dennis, Vice-President, A. W. Nicodemus, Treasurer, Asa B. Gardiner Jr., Secretary, R. H. Ruffner, Directors, E. A. Wilson, S. M. Shoemaker, and G. H. Hibbard. It was moved and duly seconded that the secretary cast the ballot for the nominees. The motion was unanimously carried. The ballot was cast and the meeting adjourned for lunch.

In the afternoon the association was again called to order at 2.30 by Mr. S. M. Shoemaker. There were about 300 dairymen present. Dr. John F. Anderson, President of the American Public Health Service, was introduced and spoke on—Why Standards of Milk are Necessary for the Welfare of the Dairy Industry. Many questions were asked Dr. Anderson and much interest was shown.

Dr. H. S. Gillilend of Pennsylvania spoke on Bovine Tuberculosis. At the conclusion of Dr. Gillilend's address a rising vote of thanks was given Dr. Anderson and Dr. Gilli-

lend for the splendid entertainment and useful information.

The meeting adjourned in due form.

R. H. RUFFNER,
Secretary.

PRESIDENT JOHN M. DENNIS: Gentlemen, you have heard the report of the Secretary. What is your pleasure? With no objections, it stands as read.

Is Dr. Hopkins present? We will now have Dr. Hopkins announce the prize winners in the clean milk contest.

Dr. Marion B. Hopkins, Chief Food Inspector of Baltimore, announced the winners for the Market milk contest as follows:

		WON BY.	SCORE.
1st	Prize,	$50.00—A. B. Twining, Forest Hill	95.3
2nd	"	25.00—Miss Annie Grafton, Forest Hill	95.0
3rd	"	15.00—H. G. Englar, Linwood	94.5
4th	"	10.00—A. G. Ensor, Forest Hill	94.0
5th	"	7.50—W. P. Hammond, Reisterstown	92.5
6th	"	7.50—H. W. Wheeler, Street	92.25
7th	"	7.50—C. S. Bolinger, New Windsor	91.0
8th	"	7.50—Mrs. Joseph Belt, New Windsor	90.0
9th	"	7.50—G. Folks, Glencoe; (milker for W. H. Detrick)	88.5
10th	"	7.50—D. G. Harry, Pylesville	87.25
11th	"	7.50—A. D. Radebaugh, Bynum	87.0
12th	"	7.50—C. Wiley, Glencoe; (milker for W. H. Detrick)	84.25
13th	"	7.50—J. C. Burk, Hydes	84.25
14th	"	7.50—S. R. Weybright, Detour	84.25
15th	"	7.50—J. W. Beachman, Westminster	80.0
16th	"	2.50—E. Riley, Glencoe; (milker for W. H. Detrick)	74.0
17th	"	2.50—W. E. Burall, Le Gore	70.0
18th	"	2.50—N. S. Mummert, Glen Rock, Pa	69.3
19th	"	2.50—Bergen T. Brown, Freeland	61.5
20th	"	2.50—Martin Kelley, Thurmont	61.4

The report of Dr. Hopkins follows:

Forty contestants entered the milk contest of the Dairymen's Association this year. The Association offered twenty prizes amounting to $195.00 for market milk shipped to Baltimore City. The Contest extended over a period of one month. Four samples were collected by Health Department inspectors from each contestant. These samples were examined for bacteria, butterfat, solids not fat and acidity by the laboratory force of the Health Department, and for

flavor and odor and visible dirt by Mr. L. B. Cook, Milk Specialist of the Bureau of Animal Industry.

A perfect score of 100 is made up of 35 for bacteria, 25 for flavor and odor, 10 for visible dirt, 10 for butterfat, 10 for solids not fat, 5 for acidity and 5 for the bottle and cap. A perfect score was allowed on this last item.

The most important factor in making a perfect score is the bacteria count. For samples averaging above 200,000 bacteria per cubic centimeter, the score for bacteria is zero. The lowest average bacteria count found was 4,400. The average bacteria count for the twenty prize winners was 80,000. With very few exceptions a perfect score was obtained by all contestants for fat, solids not fat and acidity.

Comparing the results of this year's Contest with the Contest of last year, we find an increase in contestants from 26 to 40. The average bacteria count of all contestants this year is less than 2 million. The corresponding average of last year was 3¼ millions. There has been, then, a decided improvement both in the interest in the Contest and the milk submitted by contestants.

PRESIDENT JOHN M. DENNIS: These fortunate prize winners will get their checks this afternoon.

We will now be favored by an address by Dr. Cook, of the United States Department of Agriculture. (Applause.)

MR. COOK: Mr. President and Members of the Maryland State Dairymen's Association, I think Dr. Hopkins has said all that can be said about this milk test, and so I don't care to take up much time in saying more along the same line. Most of you are interested in the prize winners, and, of course, you all know who they are. Oftentimes we wonder whether these tests are of any educational value or not. I notice, in going over our past records, that out of the first fifteen prize winners all except three were old contestants, men who were in our contests in Baltimore before, which I think, on the face of it, speaks something for the educational value of these tests; in other words, most of the young men were men that were low down in scores and didn't get prizes, or else got some of the prizes between 15 and 20. But there

is one thing about the test as a whole here that seems rather a shame to me, and that is that more of the dairymen don't enter this test. Of course, I realize it is limited to those who ship milk into the city of Baltimore, but there seems to be several hundred such gentlemen, and it seems, when twenty prizes are offered, and there are only forty contestants, it is up to the dairymen who are present today to be in the contest next year. We ought to have one or two hundred in a contest like this, with twenty prizes offered. If I were a dairyman and went into a contest with so few contestants I would think there was something wrong, so you will find, from all phases, you will have a chance of gaining something and practically nothing to lose. I want to encourage more dairymen to enter this contest in the future and to make it a real contest in which the people have to fight in order to get the prizes. As it is now, some of the prizes almost go begging, you might say. The lowest score was 61.4 in which we gave a prize. It seems to me that is getting the scores down pretty low to offer and give prizes, but, of course, there are no restrictions, but it has occurred in years past in this Baltimore contest, and I hope the dairymen will feel they have something to gain and will enter this contest in the future, and swell the numbers up to one or two hundred at least. Now I have the detailed score cards here which we are going to give to the dairymen. If any of the contestants are present and wish to get their cards today I will be glad to give them to them. If not, I will mail them to you in a day or two.

A MEMBER: In connection with what Mr. Cook has just said, I would like to make a suggestion for the future contests. I think it is almost unbelievable that prizes should be given for a score of 61.4, and I really do think we ought to restrict all prizes to a reasonable score. I think 61.4 as a score ought not to have a prize.

PRESIDENT JOHN M. DENNIS: I take it that our Association recognized that everything has to have a beginning, and our last speaker called attention to the gradual improvement in the production of this milk and specifically noted that three of the first four prizes were old hands at it. They are getting better all the time.

A MEMBER: In connection with that I might just say we have labored for 7 years to get the farmers interested in this, and I think 7 years is rather a long period of education. (Laughter.)

PRESIDENT JOHN M. DENNIS: Any other remarks on the question of prizes, gentlemen?

We will now have the pleasure of introducting Dr. J. A. Foord, head of the Division of Agriculture at the Massachusetts Agricultural College. (Applause.)

FACTORS AND OPPORTUNITIES IN SUCCESSFUL DAIRY FARMING.

By J. A. FOORD, Professor of Farm Administration.
Massachusetts Agricultural College.

Ladies and Gentlemen:

They don't call me "doctor" at home, my good friend Shoemaker tacked that on. I noticed by your program that you were to have lantern slides yesterday and again this afternoon, so I brought a few slides, and, instead of bringing charts, I had these put on lantern slides also, but the room is not dark enough to show them. I am sorry I didn't notify Mr. Symons. I will do the best I can without them.

My subject is put down as "Factors and Opportunities in Successful Dairy Farming." I accepted the invitation to come here with a little hesitation because I was at Delaware College ten years ago, and I know those fruit men over there don't seem to think it is "up to them" to raise dairy products, except around Wilmington. On the other hand, you have large cities in Maryland, and we should not forget that almost every person uses some dairy product every day. The recent campaign of the National Dairy Improvement Association, is going to help, and it seems to me that the dairy business is something that we have got to attend to.

Owing to the fact that I am without my charts, I want you to be perfectly free to discuss anything I may say, and I will give you my opinion, and you give me yours, because it is only in this way that we can get ahead. I might say that

at the College farm, of which I have charge, we are running a herd of sixty-four cows for the production of high-class milk.

I think there are four important factors in successful dairy farming, the cow; the price; the farm; the man. With reference to the cow, I note that Professor Minkler is going to discuss that this afternoon, but there are some things about the cow that I want to say; there are three items that come from the cow on the credit side of the ledger,—milk, calf, and manure. Milk, of course, is the more important. I don't know just what your average production of milk is. In Massachusetts we say the average production in the State is about 4,500 pounds per cow. I went to the Department of Agriculture yesterday to find your average production, and they couldn't tell me. We have cows in the College herd that are giving eighteen, twenty, and twenty-two thousands pounds, under very little better than herd conditions. I noticed, in a bulletin from your Station, one of your Dairy Improvement Associations gives a record of their first year's work, and their ten best cows in the Association had an average yield of 8,892 pounds of milk. The ten poorest cows had an average yield of 3,443 pounds. Now, gentlemen, here is a factor in the improvement of the milk business that we cannot overlook. You and I know that there are these poor cows—boarder cows. How can we get around this? It is interesting to note that the second year the herds in that Dairy Improvement Association, right here in Maryland, were much improved, and in every case but one there was a larger yield. In other words, the poor cows were spotted and gotten rid of. Of course, you don't have to have a Dairy Improvement Association. You can do it yourselves, by weighing and testing, but it seems to me that the Dairy Improvement Association is an important factor in the improvement of our herds. I don't need to explain to this body that one tester may take charge of twenty-six herds, spending one day each month with the owner of each herd. The Dairy Improvement Association brings men together in a group, and you know farmers are a little apt to be independent, but "cooperation" is the word of the hour today in business.

After finding out these poor cows in your herd, having put the mark upon your three, and four, and five thousand pound cows, and also put the mark on the eight to ten thousand pound cows, it is necessary to get rid of the poor ones. How are you going to replace them? I have found that men who want to sell cows are distinctly selfish and usually want to sell the poorest cows. No matter what you offer some dairymen for their best cows, they still think it is better to keep them in the herd. Our Massachusetts dairymen got into the habit of saying it is cheaper to buy cows than to raise them. When I came back to Massachusetts from the Middle West they said it was cheaper to buy corn than to raise it, but I think we have proved the opposite. It is all right to buy if it is cheaper to buy than to raise, but prove, first, that it is. Our farmers didn't prove it and they bought their cows from Vermont and New Hampshire; the price of cows kept climbing up, and they now know they must raise more of their own cows. One of the things that brought this about was the question of tuberculosis. They found that in buying cows they were very apt to buy cows affected with tuberculosis. The trader, gentlemen, is never safe. I have the good fortune to have charge of a herd of 150 head that were tested last spring without a reaction. We have been nine years coming to that point. Now there has been a good deal of nonsense talked about tuberculosis, but let's be perfectly fair. Let's look the thing squarely in the face. We know what tuberculosis is in the human family. We know that a large proportion—I believe they say one out of seven are, at one time or another, affected with tuberculosis. We know how we feel towards a man that gets the disease. We feel sympathy for him and know that he can't do a day's work. We know that he has to be careful. He goes to the mountains and takes life very easily. Now, gentlemen, tuberculosis isn't any different in cattle than it is in the human family, do we want such cattle in our herds as business farmers? Do we want cattle that have got to be babied and taken extra care of? It is simply a straight business proposition. We don't want tuberculosis in our herds. A healthy herd is more profitable than an unhealthy one. We know that tuberculosis is a germ

disease and that by careful work we can detect it, even in its early stages, by means of the tuberculin test, properly and carefully applied. Isn't it up to us, then, as business farmers, to find out the cows in the herd that are healthy, to eliminate the diseased ones, and to get the herd on a good working basis? It seems to me we have beaten around the bush long enough. It is time we stood on our feet and looked the thing squarely in the face. I believe it is one of the first requisites of a successful herd. We are not going to do it all at once. Many animals can be slaughtered and, under careful inspection, used for food purposes.

After you get a clean herd you can raise your own stock to replace those boarder cows that you have eliminated because they did not give milk enough to pay their way. We have all read that "the bull is half the herd." Now I want to give you a few figures from the work of the Ohio Experiment Station. The Ohio Experiment Station bought a bull, for which they paid a hundred dollars. They raised from that bull—seven heifers, and those seven heifers gave an average of 1,299 pounds of milk more than their dams. They gave an average of forty pounds of butter fat more than their dams. If you figure butter fat at thirty cents a pound and for six years, you will find that the difference is $504. In other words, that bull added to the product $504. They bought another bull, and this bull was the sire of eleven daughters in the herd, and those daughters averaged 700 pounds of milk less and forty-five pounds of butter fat less than their dams. If you figure that at thirty cents a pound and for six years, you will find that you are short $891. Gentlemen, just eighteen cows in the Ohio Experiment Station herd, and the difference between the use of one bull and the other was $1,395. Does it pay to use the poor bull? Had we not better pay $200, if necessary, even if we have only a small herd? Here is another thing from Ohio. One of these Dairy Improvement Associations that I have spoken of, that you already have started in your state and that are explained in Bulletin 187 of your Station, found out some facts about two bulls. Bulls A and B. Bull A had nineteen daughters. Bull B had been the sire of 23 daughters.

The actual count shows that Bull A produced in his daughters an increase over the record of their dams of forty-eight pounds of butter fat; that Bull B, in his daughters, produced an average decrease of twenty-six pounds, a difference, then, of seventy-two pounds between the two bulls. Now, what does it mean? You have 177,000 cows in Maryland, according to your census. If you choose, for replacing your 177,000 cows in Maryland, which you must do in the next few years, bulls like Bull A, and butter fat is worth thirty cents a pound, it means $2,500,000 a year to you dairymen. If you choose for the sires of your next generation of cows bulls like Bull B, it means a loss of one and one-third million dollars, just replacing the cows you now have. There is a difference of four and one-half million dollars, or twenty-two dollars a cow. It seems to me that is an opportunity worth grasping. How is the best way to do it? Can we not agree, in a certain community, that a certain kind of cow is the best suited for those conditions, whether it be a Jersey, Guernsey, Holstein, Ayrshire or Shorthorn? Can't we get together and agree that we will keep mostly this kind of cattle in this region, and then it will be a simple matter to use good bulls and exchange them if necessary. It means cooperation, but we have got to come to that if we are going to compete with the other interests in the business world today.

Something interested me recently in one of the breed papers, a double-page advertisement showing four herds of the same breed in the same town with young stock for sale. If you were looking for young stock, wouldn't you go to a town with four good herds in it rather than a town with only one good herd in it? It seems to me that was a forceful and a strong advertisement.

Now just a word about pure-bred cattle. I don't think we can go to the business farmer and advise him to keep pure-bred cattle right away. I don't think he can afford *not* to use a pure-bred bull or *not* to raise his own stock, and I have tried to show you by figures from Ohio what is the value of a good bull, and we have considered only one generation. If a bull *decreases* the product of your herd twenty-six pounds of butter fat each generation, long before your boy takes

charge of the farm, you will have a herd of cows that won't give anything; but I don't think we can say to the business farmer it is the best thing to stock up with pure-bred cattle. But when you get that pure-bred bull save up a little more and buy a pure-bred heifer. You will take a little more interest in that animal, and by and by you will say: "I guess I'll get another." And before many years you will have a pure-bred herd. I don't say that all the pure-bred herds in this country will produce more than the grade herds, but they have the ability, and if you will give them the care that they deserve they are more profitable. I know of a man in Massachusetts who started years ago to breed grade Shorthorn cattle, and he has built up as uniform a herd as I ever saw. But what are the results? He is selling his bull calves for breeding purposes, [unfortunately] at fifteen dollars each. Had he put the same amount of thought and time into breeding up pure-breds, he would have been selling those calves for $50 to $100 each. Now why not? The market is here. The three things, remember, on the credit side of the ledger with the cow are milk, the calf, and manure. Let's get the cow that will produce the most milk, of the breed that will give a calf that will sell for the most, and let's take care of the manure. One other thing, the young people on the farm will take a great deal more interest in pure-bred cattle or in pure-bred poultry than in scrubs, and if you want pure-bred young people, have pure-bred stock on your farms.

Now a word about another factor—the price. If the price is below cost don't go into the dairy business. That is simple business. I don't see how you can get around it. What are you in the dairy business for if you can't get what it costs you to make the milk? But, gentlemen, do you know what it costs? Please notice, I didn't say "ladies and gentlemen," because I know the ladies who are farming keep their books and know, and I attribute the success of women farmers to that one fact, that they keep books. I have known women to go into agriculture who didn't know anything about it from a practical standpoint, but they have made a success because they have kept their accounts and know what it costs to do business. Don't you think we ought to know what it

costs? I know just as well as you do that cost accounting on the farm is a difficult matter, but I don't think that excuses us, and, after all, it isn't so difficult as we think. Do you know what the food cost of a quart of milk is? Can't we get at the food cost and the labor cost? Several things,—the cost of the cow, and the cost of the calf, depreciation, interest, and overhead expense come in to the total cost, but do we know as much about our business as we ought to in this particular respect? I attribute one of the reasons for the increases in price that we have been granted in Massachusetts recently to the fact that farmers were able to come forth with accounts and show that they had been producing milk at a loss, and that it was only fair that more money should be paid. I don't believe they would have gotten it unless they had been able to show that conclusively. Our farmers have been doing very much as they have in other parts of the country and have been furnishing milk below cost. The farmer in many cases has been living on the interest of his money instead of on what his herd was earning. I think we ought to know. Here is another case where cooperation can do something for the dairy farmers. I think, gentlemen, you ought to have in every dairy region of this state a section of this Association, doing the business of cooperation. When you get that, why not start a community system of accounts very much as we have the community cow-testing associations,—why not have a young man who will take twenty-six farms and visit you once a month, and keep your accounts up to date? You don't need an elaborate system. Here is another suggestion. Get the young people on the farm to keep the accounts. It will stimulate their interest, and they will very soon know as much about the farm as you do, at least from the business standpoint. They will know what it costs to do things, which is a very important point in any business, whether dairying or manufacturing.

There is another thing, it seems to me, that enters into the question of cost,—and that is the grading of milk. In New York they grade all milk,—Grade A, raw or pasteurized; Grade B, pasteurized; Grade C, pasteurized; etc. We buy milk for its food value, and we want it produced by healthy

animals, and we want it clean, so it seems to me that it is perfectly reasonable to grade milk on its food value and on its sanitary condition. If you will do this, don't you see it is perfectly square to everybody? The careless man gets what is coming to him; the man who is careful gets what is his due. In other words, it is just what the fertilizer man has been doing for twenty-five years, and that is "to state what you sell, and sell what you state." It is a perfectly honest, straightforward business maxim. I mention this as a factor in success because I believe there is an opportunity in grade A milk, in a good quality of milk. It may take some advertising, some care on your part, and good business sense, but I am sure that in our cities as well as in the country there are hundreds and hundreds of people who are willing to pay for a clean, good product. One of the graduates of our College went West with me some years ago to look over some barns and stables at other State colleges. He came back and built a stable that was clean and sanitary, a stable for the production of good milk. He was getting then seven cents a quart for his milk, retail. He moved the cows in, invited the public of that community to visit him on a certain day, showed them what he had done and was going to do, gave them an invitation to come whenever they wanted to, and very shortly after raised the price to eight cents. He continued this plan of inviting the people whenever they wanted to come, and later raised the price to nine cents, and then to ten cents, and now he is making money on the proposition. He realized, gentlemen, that he was not furnishing what the best of the consuming public wanted. You will find, I think, that the good products are the ones on which there is the most margin. The staple products everybody raises—there is very little margin on them, as a rule. Too much on the market. You want something that will stand out above the others, and it seems to me that is what the members of his Association ought to strive for, a grade A quality. Take the consumer into your confidence, show them what you have, keep your accounts so you will know what it costs, and I don't think you will have any trouble in making money on grade A products. It means clean, healthy cows, and clean stables, and I don't

think it is too much for the consumer to ask. Here is the demand; I think we ought to supply it.

Now a word about the third factor, the farm. I don't know that I need to talk to you in Maryland so much about the farm as in Massachusetts, where we have the old hand power sized farms. Here you have farms at least twenty-five acres larger than ours on the average. It seems to me we ought to use machinery, and if we use machinery on the farm, we should have farm enough and business enough to keep that machinery going, and fields large enough to use it economically. In the same way, we want a dairy large enough to use machinery to good advantage. Now I am not urging, gentlemen, against the small farm, but if you have machinery, you must have enough to do to use it economically. In the dairy business the transportation is also worthy of your consideration. I don't think we appreciate the influence the gasoline truck is having on the land value of farms that are some distance from markets. You don't have to be right close to your market where you have good roads. I should want to consider the location, and I should want to consider the lay of the land. I would not buy a farm for a business just because I might happen to have been born there. I would consider topography just as carefully for the dairy business as for the location of a factory if I went into the manufacturing business.

Now there is another thing that you may not agree with me on, and I shall be glad to discuss it with you. We find, in Massachusetts, that the most successful dairymen are not the ones that give all their attention to dairying. They have diversified farms and we believe that a man should raise some cash crops in addition to his dairying because it gives him a better labor distribution. We are very careless about labor distribution on our farms. We do not sit down in winter and study out carefully where and how we can use our labor to best advantage. Something can be done in diversity of crops. We find that our most successful dairy farmers are getting not over seventy per cent. from their dairy stock products, they are raising more crops. We find also that our poorest farmers are buying more feed and raising less than the good farmers.

Now to take up the fourth factor in success, the man. I hesitate to discuss with this audience just what kind of a man the successful dairy farmer ought to be, because I know that most of this audience are successful dairymen. Of course, a successful dairyman would need to be a good farmer and a good business man, and I feel sure that most of the members of this audience are both. On the other hand, I wonder if some of the older men are not feeling some of the new things that come along, a little bit irksome. If they are not wondering whether they had better adopt quite so many of these new things. They are a little bit apt to say: "That is all right for the young fellows, but I don't believe I want to bother with it." Now, are you giving that young man of yours an opportunity? Are you giving him a chance? The Agricultural College is offering both short and long courses, —are you backing up the college? Are you fitting this young man for the work you want him to do? Are you giving him an opportunity to train himself? There are hundreds of things in the dairy business today that have to be considered, that didn't have to be considered when you were a young man. I hope you will take an interest in the College. We want our farmers to come to the Massachusetts Agricultural College, and if we are not doing things right we want them to say so. We don't want destructive criticism, but constructive criticism, and I hope that in whatever dealings you have you will always remember that. Don't tear a thing down unless you can build it better. Don't destroy a thing unless you can construct something better. If you take this attitude you will soon have a lot of your farm boys down at the Agricultural College. You ought to have hundreds more than you have there now.

And when that boy comes back—perhaps he has come back on some of your farms,—don't hang on to the management of that farm too long. Give the young fellow a chance. Remember that experience is what develops a man, and you want to make a man out of that boy of yours. The strength of this nation, gentlemen, depends very largely on the farmers of the country. We want the next generation of farmers to be strong men, forceful men. Are you going to de-

velop a strong, forceful man on your farm? You can't do it unless you give that young fellow a chance. You can't keep him a boy all his life until you die, and then have him step into your shoes and do as well as you did. Give him a chance to get that experience. Take a day or a week off and see what some other farmers are doing. It is very easy to see a thing. It is a little bit hard sometimes to take it all in when you read it in a book or a bulletin.

Gentlemen, in this rather rambling talk which I have given without the slides which I hoped to show you,—I have tried to cover two or three of the factors which I think are very important in the dairy business and two or three other factors which I think we have sometimes neglected. If I have not made myself clear I should be glad to answer any questions.

A MEMBER: I would like to ask the brother a question. How are you going to find the A bull?

MR. J. A. FOORD: I suggested the possibility of community breeding. In any dairy community the bulls are not used as much as they might be, if you will take up community breeding, you can use the bulls the first year very little until they are proved out. Now I realize it is difficult to keep bulls until they are old, but for every bull, we raise a dairy steer, and work them together under the yoke. It costs money, but I believe it is worth all it costs and we work bulls until they are eight or ten years of age, I realize there is difficulty, but I think you will agree with me that we have been very careless on this question. We have bred from scrub cows. We can improve a lot of our herds by just selecting the cows and using good bulls.

A MEMBER: Don't you think it advisable to keep a bull until you find out what he will do?

MR. J. A. FOORD: Yes, I think it is.

PRESIDENT JOHN M. DENNIS: Gentlemen, are there any more questions you care to ask Mr. Foord?

MR. J. A. FOORD: I might say, Mr. Chairman, we are producing, on the College farm, certified milk, and do it at a profit, so I think that I know whereof I speak. It has been a slow process to build up a trade in certified milk, even in the city of Boston. I don't want to advocate certified milk,

but there is a demand for a good, clean milk that can be sold at a moderate price, and I think that you will find that profit in all kinds of food products, is made not so much on the staple products as on the product that is a little better. Something you would enjoy on your own table.

A MEMBER: Should not the dairymen raise their own proteins instead of buying?

DR. J. A. FOORD: I think in Maryland you do raise more proteins than we do. I think you could raise more clover and alfalfa, though, than you do.

MR. S. M. SHOEMAKER: I just want to say, so long as you have brought up certified milk, I wish you would make it perfectly clear what certified milk is, because we have before the City Council now a milk ordinance in course of preparation, in which there are two distinct grades,—at least, the proposed ordinance,—I don't think it has gone into effect,—it hasn't even been reported back to the Advisory Committee, —but at the present time the possible recommendation of that Committee provides certified milk as one grade and a selected raw milk as another grade. Then, of course, the selected pasteurized and the standard pasteurized milk also, but there seems to be a confusion as to what certified milk is. There is not a quart of certified milk today produced in Maryland, and never has been so far as I know.

MR. J. A. FOORD: Certified milk is just what its name signifies in that it is certified by a commission of physicians. It means, if it means anything in America, that the milk comes from healthy cows that are tuberculin tested, usually twice a year, that it is milked by healthy men who are examined at any time that the doctor cares to walk in and look them over. Anything that the physician requires has to be done with reference to those men. Certified milk means, further, that the bacterial count must be below 10,000 in most States. That, I think, is being accepted everywhere. Of course, most of the certified milk will contain less than 5,000, some of it below 3,000, and some below 1,000. Our own average count this year is below a thousand. It means also, in some States, that it must have at least four per cent of fat. It is safeguarded at every point.

PRESIDENT JOHN M. DENNIS: Gentlemen, any more questions?

A MEMBER: Mr. President, I move the Association tender a vote of thanks to Dr. Foord for his information.

(The motion was adopted.)

FRIDAY, NOVEMBER 17th, at 2.30 P. M.

PRESIDENT JOHN M. DENNIS: In this morning's lecture by Dr. Foord he brought forward a new suggestion relative to bookkeeping on the farm. He stated that the milk-testing associations had been very helpful and almost uniformly successful and that he believed that the application of the same principles of farm bookkeeping would be of inestimable value to the farmers of this state. Now I want to be the first applicant for the traveling bookkeeper. I was raised on a farm in Frederick county, and I have lived on a farm nearly all my life, and I have had farm books about me nearly all the time, but I confess that has been just about one job about farm life that has had me bluffed all the time, so if we can get a proper accountant probably systematized under the direction of the Secretary of Agriculture, to show us each year how much we are ahead or how much we are behind, I think it will really be a blessing to all of us.

I now have the pleasure of introducing to you Mr. J. A. Gamble, Market Milk Specialist of the United States Department of Agriculture. Mr. Gamble. (Applause.)

THE PRODUCTION OF CLEAN MILK.

By J. A. GAMBLE, Market Milk Specialist,
U. S. Department of Agriculture.

Mr. Chairman and Gentlemen of the Maryland Dairymen's Association and Friends:

It is hardly necessary for me to tell you that it is a great pleasure to come up here this afternoon and discuss with you the question of clean milk production, and in the discussion I am going to stick as close to the practical side as possible,

because it seems to me that this must be kept before us if we are to make real progress.

The term "milk" is from the Greek word meaning "to press out with the hand," and has come into general use in describing this fluid through which nature has made possible the continued existence of the human race. Just when and where man and the cow met is very largely a matter of conjecture. It seems certain, however, that man found the earth populated with other wild creatures, among them the herbiverous ancestor of the present dairy cow. We must soon have observed that these peaceful, grass-eating creatures were endowed by nature with that upon which its offspring seemed to thrive. I believe that the calf was the first dairyman and an object of interesting observation to the human creature looking for that with which to satisfy his ever returning hunger. It is a far cry, however, from those early days when our ancestors drank the milk of the cow and called it good to the present day with our milk question facing us in all its complexities, for hamlets have grown into towns, towns into cities, cities into great manufacturing centers, the work ers in them dependent upon workers in the country to provide a clean and a reasonably safe milk supply. Whether through acquired taste or custom, appreciation of its palatability, we find consumers in this country paying out annually for milk the enormous sum of over $1,000,000,000. This amount of money exceeds the value of all the gold and silver taken from all the mines of all the world during the same period, so we get an idea of the immensity of the industry that we are here this afternoon to discuss together. Great sums of money are being expended for the handling and sale of still greater amounts which seem certain to follow, and in this connection it seems to me that the increase in consumption of milk will be very largely determined by the consumer's opinion of its nutritive value and freedom from disease. We may safely say that the milk industry will advance according as it is standardized and its products made safe and brought to the attention of our consumers through education. It is rather an easy task to provide a clean and reasonably safe milk supply for the small community, or for a small per

centage of the people in our large cities, but to provide this for the average, and averages are what count, is a problem beset with many difficulties. I have brought here this afternoon a few slides to illustrate what I may say regarding a few of the factors that do influence quality in milk.

Slide No. 1. We have illustrated here the distribution of our cow population over the United States, which shows us the States containing the larger percentages of our cow population and those where less than three cows per square mile are kept.

Slide No. 3. However much its presence may be disguised, we find milk containing, on the average, about eighty-seven per cent of water, leaving thirteen per cent. of total solids or everything not water and gas, divided, according to this chart, into fat, casein, sugar, albumen, etc. The fat, as you all know, is that part which rises to the surface on standing, the casein is largely made up of protein and gives milk its white color; then we have the sugars of milk,—all sugars are sweet, but not in the same degree,—milk sugar is one of the least sweet of sugars.

Slide No. 4. If we were to magnify a drop of milk about three hundred times we would see our fat globules standing out as we have them here on this chart, each little fat globule having its own individuality and, being lighter than the rest of the milk, may rise to the surface on standing, or can be separated by centrifugal force.

Slide No. 5. Here we have some of the bacteria we meet in board of health work. I show you these to illustrate what bacteria look like. We have pictured here a few of the different forms of bacteria including the lactic acid organisms, the bacteria which convert milk of sugar into lactic acid.

Slide No. 6. Some of you dairymen present may have been told that your milk contained 20,000 bacteria per cubic centimeter, and I am wondering if all of us understand what is meant by a count of 20,000 bacteria per cubic centimeter. Bacteria are little seed-like bodies which grow and develop in the milk. In finding the bacterial count of a sample of milk we first agitate so as to, as evenly as possible, distribute these little plants throughout the milk and after agitating,

with a sterile pipette we may take one cubic centimeter of the mixture of milk and bacteria and introduce it into a sterile flask containing for example ninety-nine cubic centimeters of water. This makes one hundred cubic centimeters of milk solution. By shaking this we evenly distribute our bacteria through the hundred cubic centimeters of solution, so that each cubic centimeter of this solution contains one-hundredth part of the milk introduced—one cubic centimeter—and one-hundredth part of the number of bacteria from this one cubic centimeter of milk introduced from our sample.

Slide No. 7. One cubic centimeter of this solution is then put into a sterile Petri dish. We now have in our Petri dish one one-hundredth part of one cubic centimeter taken from the milk sample, because we have diluted our sample of one cubic centimeter one hundred times.

Slide No. 8. We next pour in the media which has been liquified. This afterward solidifies and holds in place the bacteria introduced. After incubating in an incubator which may be held at about body heat for about forty eight hours, each little bacteria introduced may have become a colony large enough to be seen by the naked eye.

Slide No. 9. We have here the number of organisms from our one one-hundredth part of a cubic centimeter of milk. We will say that on this plate we have twenty colonies. Now then, if twenty colonies grew from one one-hundredth of a cubic centimeter—the amount taken—there should be a hundred times that amount, or twenty hundred, in the cubic centimeter of milk from which this was taken and in the milk of which the bottle was a fair representative. We could have diluted with still another ninety-nine cubic centimeters of water, and then, instead of having one to one-hundred dilution, we would have one to ten thousand, and, by counting the number of colonies which developed by 10,000, we would arrive at the approximate number of organisms per cubic centimeter in our original milk

Slide No. 10. We say it is desirable that all foreign matter, including hair, be kept out of milk. Here we have a short hair laid on a Petri dish containing media and incubated at a certain temperature for a certain time. We have here

thousands of organisms which have developed from the bacteria introduced into the Petri dish by this small hair.

Slide No. 11. Flies also should not be allowed to gain entrance to milk. Here we have the inoculation caused by a fly—no telling where it came from—walking across this plate, the plate was afterwards incubated, and the inoculation multiplied sufficiently to be seen with the naked eye.

Slide No. 12. After care has been taken to produce milk clean, the few bacteria gaining entrance should not be allowed to develop. It is essential that milk be cooled and kept below 50 degrees Fahrenheit in order to do this. Here we have illustrated a sample of milk with a count of 500 per cubic centimeter.

Slide No. 13. This is the same milk, held at a temperature which permitted the development of the bacteria,—held at 60 degrees for twenty-four hours,—instead of having 500 bacteria per cubic centimeter, we have 2,800,000, in a word, this explains how some of our high bacterial counts come about.

Slide No. 14. Here we have illustrated one of the ways through which the manure, once thrown out, is carried back into the stable. The cows wading through the yard soil their udders and unless their flanks and udders are washed, part of this dirt usually finds its way into the milk-pail.

Slide No. 15. I don't suppose you folks in Maryland have stables like this, but I brought this along to show you what a really dirty stable looks like. It is possible to produce high-grade milk in a low-grade stable, it is true, but it is also true that it is easier to produce the same grade of milk in a high-grade stable.

Slide No. 16. Here we have a stable that will hold just as many cows and which can be kept clean with less effort than the stable in the picture I have just shown you.

Slide No. 17. Now it seems to me here is one of the means of contamination that the producers of our country are some times unjustly blamed for. Milk cans are sometimes contaminated before they are received at the farm. Here we have pictured cans thrown off the train in such a way that covers are knocked off and dirt allowed to get in.

Slide No. 18. Here we have a milk plant not conducive to cleanliness or a milk plant from which one would not expect to receive a high grade of milk, because it is not equipped for handling milk in a clean manner.

Slide No. 19. I sometimes think that consumers, after all, have a responsibility and should take pains to keep the milk they receive cold and uncontaminated until consumed.

Slide No. 20. Here is one of the ways that the consumers of milk in the city of Baltimore can be of assistance to the Health Department, and to the dealers of the city in improving the milk supply. Here we have milk bottles, the cleaning of which the housewife, after allowing them to become dirty, had apparently given up for a bad job. These dirty bottles are sent back to the dealer with the expectation that he is going to return her or her neighbor a high grade of milk in these bottles which she was unable to clean.

Slide No. 21. My talk would be incomplete if I did not speak of the dangers that may result from the use of milk which is unsafe. I believe, personally, that here we have illustrated one of the avenues through which some of our typhoid epidemics may have originated. Flies having access to this privy have also access to these milk cans.

Slide No. 22. Milk should have a special place in which it may be cooled and stored, and in which it will be kept clean and free from dust and dirt. This, apparently, is not a proper place for such handling of the milk.

Slide No. 23. We say: "Keep dirt out of milk, and thereby, keep out bacterial contamination." Possibly one of the best means of keeping dirt out of milk is in the use of the covered pail. Here we have illustrated the top of a milking pail protected against dirt by a cover. The covered pail is, perhaps, one of the great factors in keeping dirt out of milk during the milking process.

Slide No. 24. Keep dirt out of milk because it is much easier to keep it out than to strain out that which has been allowed to get in. A row of cows under the supervision of Professor Stocking, now of Cornell University, were milked into the open pail, and the average bacterial count of the mixed milk from this row was 42,000 bacteria per cubic cen-

timeter. When the same row of cows, milked by the same men, were milked with the covered pail, the average bacterial count of the mixed milk of the same row, instead of being 42,000 was 6,000. According to Stocking, the average number of bacteria excluded by the covered pail in this instance, being almost 36,000 bacteria per cubic centimeter, surely an instructing illustration of the effect of the covered pail on the keeping of dirt and bacteria out of milk.

Slide No. 25. Here we have some of the types of pails that we find in use on the farms of this country,—the Ideal, the Sanitary, the Gurley, the Philadelphia pail, and many other types of covered pails. Personally, I would like to see some of these high tops constructed a little differently. It has been my experience that a hood set up as high as some of these illustrated may interfere in milking cows with low udders.

Slide No. 26. We have here the simple operation of washing the flanks and the udders of cows. This chart is also by Stocking. The milk from cows, the flanks and udders of which had not been washed, was examined for the number of bacteria, and found to contain 7,000 per cubic centimeter. When the flanks and udders were washed, the count dropped ninety per cent, or to 716 per cubic centimeter, the decrease due to washing and wiping, according to Professor Stocking, being 6,342 bacteria per cubic centimeter.

Slide No. 27. I show you this picture primarily to call your attention to the milk house. Personally, I believe that the milk house should be located close to the stable, where it will be used summer and winter, but also arranged so that the odor from the stables may not permeate the air of the milk room. If it does, it may also permeate the milk which is kept in the milk house.

Slide No. 28. Here we have illustrated some of the reasons why we should keep dirt out of the milk. The opinion has been expressed by some dairymen that it is not necessary to take precautions in keeping dirt and bacteria out of milk as "the strainer catches it." The slides that follow illustrate the folly of the above sentiment. This slide illustrated a mesh of a wire strainer taken from a strainer milk pail magnified

sufficiently to see lactic acid bacteria. From this we see how impossible it is to strain bacteria out of milk with a wire strainer.

Slide No. 29. This slide shows a cheese-cloth strainer magnified sufficiently to see bacteria and like the slide it follows shows us how impossible the straining of bacteria from milk with a cheese-cloth strainer.

Slide No. 30. The udders of cows washed and dried preparatory to milking were brushed with the hand and the particles of dirt dislodged were allowed to fall on a white paper. The wire strainer above referred to was laid on the paper containing the dirt and a micro-protograph made. This illustrated how inadequate a wire strainer is in straining out the finer particles of dirt getting into milk.

Slide No. 31. A single thickness of cheese-cloth was laid over the same sediment and another microphotograph secured. This illustrates the inefficiency of single thickness of cheese-cloth in straining dirt out of milk.

Slide No. 32. To find the effectiveness of the different thicknesses of the cheese-cloth and other strainers, one gram of dirt, dried to standard weight, was weighed into a number of bottles of milk. Here we have a photograph showing the one gram of dirt in the bottom of each of the bottles of milk afterwards strained through the different strainers.

Slide No. 33. One of these bottles was strained through the wire strainer. This is the proportion of the gram of dirt which went through the wire strainer.

Slide No. 34. Another of these bottles containing one gram was strained through one thickness of cheese-cloth. Here we have the amount of sediment of the one gram which went through this one thickness of cheese-cloth.

Slide No. 35. I have never seen milk containing more than a fraction of a gram of dirt per quart, but it was necessary to place a gram of dirt in each quart to illustrate the efficiency of the different strainers; otherwise, while the amounts of dirt passing through the different strainers would have been the same, with the smaller amount the difference would not have shown as strikingly in the photographs. Here we have a third quart strained through two thicknesses of cheese-

cloth, and giving the amount of sediment which went through these two thicknesses.

Slide No. 36. Another was strained through three thicknesses of cheese-cloth. Still a very considerable amount of dirt going through.

Slide No. 37. A quart of milk strained through four thicknesses, and yet we still have a considerable amount of dirt getting through.

Slide No. 38. Strained through six thicknesses of cheese-cloth.

Slide No. 39. Strained through eight thicknesses of cheese-cloth. This slide shows the inability of even this number of thicknesses of cheese-cloth (tight) to strain dirt out of milk.

Slide No. 40. We strained another quart of milk through one thickness of filter cloth. This slide shows the effectualness of filter-cloth compared to eight thicknesses of cheese-cloth in keeping sediment out of milk.

Slide No. 41. Here we have a quart of milk which also contained one gram of dirt which had been strained through cotton, less going through than in the case of filter-cloth.

Slide No. 42. A quart of milk entirely free from sediment.

Slide No. 43. These slides illustrate the folly of attempting to remove dirt out of milk. It apparently is much easier to keep dirt out. After the producer and the dealer have done their part in getting to the consumers a bottle of high-grade milk, it should be taken care of by the consumer. Milk when delivered should either be placed directly into the ice-box or in a receptacle provided by the consumer which will keep it from warming up in summer and freezing in winter.

Slide No. 44 Place it directly into the ice-box if this be possible.

Slide No. 45. Foods are valued for the amount of protein they contain and the number of heat calories they furnish. We have heard a great deal about the food value of milk. It is now being advertised extensively by the National Dairy Council. We have a chart here showing the comparative food value of milk, sirloin steak and eggs. To obtain protein at equal cost when milk is selling at seven cents a quart, we are limited to 16.3 cents a pound for sirloin steak and 17.6 cents

a dozen for fresh eggs. With milk at eight cents a quart, to buy protein as cheaply in sirloin steak, we are limited to 18.6 cents a pound; for eggs we are limited to 20.1 cents per dozen. When milk is selling at ten cents per quart, in order to buy protein at an equal cost or less, we are limited to 23.3 cents a pound for our pound of sirloin steak and to 25.1 cents per dozen for eggs. And so on, up to fifteen cents. With milk selling at fifteen cents a quart, in order to buy protein at an equal cost, we are limited to less than thirty-five cents a pound for sirloin steak; to buy of the protein of the eggs at an equal cost we are limited to 37.7 cents per dozen.

To obtain calories at equal cost, at seven cents per quart of milk we are limited to 9.9 cents a pound for sirloin steak and 9.3 cents a dozen for fresh eggs. To obtain calories at equal cost when milk is selling for ten cents a quart, we are limited to 14.2 cents a pound for sirloin steak and 13.2 cents a dozen for fresh eggs, showing us graphically, even at what we term relatively high prices, compared to other food products, milk is cheap; that is to say, the family that can't afford to buy milk, even at these prices here given, to feed to their children, can not afford to buy either of these foods to feed them, because, compared to these prices, milk is the cheapest of these foods.

Slide No. 46. I show you this chart last for the following reason: It can not be successfully argued that milk from the healthy cow by whatever adjective best described when it reached the consumer, be it certified, high-grade, low-grade, grade A, B, C, or D, was not a milk which met the exacting requirements of certified when the cow gave it. If it has fallen below that high standard let us not blame the cow but man and conditions over which he should have almost complete control. All this points us to the men behind the cows and the dealers who afterwards handle it as the factors to be reached and interested if better milk is ever to be secured. On them must systems and health officials rely for results and cities and towns for pure milk. Milker No. 1, milking a row of cows secured a milk which had an average of 2,455 bacteria per cubic centimeter. When this same row of cows was milked by the regular men, the count of the

mixed milk of this same line of cows was 17,105, the difference in favor of No. 1, who was interested, being 14,650 bacteria per cubic centimeter. It seems to me that if we are ever going to get far with this proposition we must realize that if consumers in this country are ever to get better milk it is necessary that such be produced. Cities may demand better milk, systems be devised for securing it, but they would be most successful in securing a better milk supply should realize that the purity of the 4,000,000,000 gallons of milk annually supplied our population of 100,000,000, is, and can still further be influenced by our 5,000,000 dairymen and their helpers who in the day soon to close and in the morning yet to come will arise, and through what they do or leave undone, determine the effect of this handling on the quality of milk which daily leaves their farm. I thank you, gentlemen. (Applause.)

MR. SHEAR: I would like to know, in connection with those charts by Professor Stocking, illustrating the difference between the milk obtained from the cows with wiped udders and those with unwiped udders, were all milked in covered pails or if the covered pail was left out of consideration in that case. I suppose that Professor Stocking, having carried on these experiments, that most likely was all in covered pails.

MR. J. A. GAMBLE: No doubt but what Professor Stocking used the same type of pails.

MR. HOOD: What is the effect of the clarifier in lowering the bacterial count?

MR. J. A. GAMBLE: The clarifier removes not only dirt, but also bacteria from milk in the clarification process. It is possible too that some of the clumps of bacteria are broken up in clarifying and the milk as a result may contain a higher number of bacteria than before the milk was submitted to this process. We may also find that part of the bacteria have been removed in the process of clarification, the increase in the count, however, being due to the breaking up of the bunches of the bacteria as before indicated.

MR. HOOD: Which would be the better milk, though, after or before clarification?

MR. J. A. GAMBLE: I prefer personally a milk that does not need clarification.

MR. HOOD: I know, but which would be?

MR. J. A. GAMBLE: The clarifier must, of course take out part of the dirt.

PRESIDENT JOHN M. DENNIS: Gentlemen, we have a fine opportunity here now for asking some very vital questions. Don't let it pass if you have any in mind.

A MEMBER: Mr. President, I have been told that it costs the United States Government, at the Naval Academy Farm at Annapolis, thirty-seven and a fraction cents a gallon to produce certified milk. Will the gentleman tell us how we can produce it? How is the average farmer to produce an equal grade of milk and sell it for twenty-two cents, which we are glad to receive?

MR. J. A. GAMBLE: I believe that the production of such a milk as they are producing at the Naval Academy is a comparatively simple process. My personal opinion is that the production of milk with a count of under 10,000 costs a man but little if any more than it does to produce a milk containing millions. It seems to me a question of seeing that the cow is healthy, that the udder is clean, that the milk is milked into sterilized pails and is cooled immediately and held below 50 degrees Fahrenheit. In my opinion, these millions of bacteria are very seldom due to inoculation but to the multiplication of the inoculation.

MR. SHEAR: Mr. Gamble, can you give the audience some figures on the influence of the sterility of the pails?

MR. J. A. GAMBLE: I have no figures here that I could give you. I wish I had.

MR. COX: Mr. Chairman, I should like to inquire if Mr. Gamble could give us a method of approaching the milker with one of his charts or suggest some practical method of carrying out his idea, expressed in one of the charts, showing that one of the milkers had produced milk of two or three thousand, and the other set of milkers had produced a milk of seventeen thousand, I think it was, or forty-three thousand. I would like to know of some of the different methods employed, that is, the practical way of getting at it. I think the chart

showed very clearly just what the condition was, but how should we endeavor to get at the regular run of milkers? Should it be premiums offered, or just how that should be done, I should like to inquire if he has something to suggest.

MR. J. A. GAMBLE: It seems to me that quality in milk is determined very largely by the interest of the man who is producing it, and anything that will create or add to that interest will improve the quality of that milk supply, whether it is done by prizes or by additional compensation of one kind or another. It seems to me vital that these men be interested, and the principal consideration that would secure this added interest may lie in a financial direction.

MR. SHEAR: Is it possible that the Agricultural Department at Washington would furnish us with a reprint of your illustrated talks?

MR. J. A. GAMBLE: Yes, sir.

MR. SHEAR: What is the bulletin's number?

MR. J. A. GAMBLE: This lecture, in part, you will find in Syllabus No. 18, of Bulletin No. 602.

MR. SHEAR: I think, from what you have said, we were on the right track for the past four weeks, which, by the way, was suggested, if I am not mistaken, by Mr. Harrison, and that is, that the individual milker rather should be considered in these contests than the rural farmer, and, for the first time in the history of our ten years' contests here, we allowed milkers from the same farm to milk a separate can of milk each day through the thirty days of the month and have samples taken from those in which the milk was milked, and, by that means, have distributed the prizes to those individual milkers. I think Mr. Felix's milkers have been fortunate enough to get two or three prizes. That seems to me to be a step in the right direction.

MR. COX: Mr. Chairman, there are gentlemen here who would like to know what effect the milking machine has upon the bacteria, whether it increases or decreases when properly operated.

MR. J. A. GAMBLE: The milking machine, when it contains no bacteria, could not, of course, increase the bacterial content of the milk produced.

MR. SHEAR: Isn't it, however, true, that it is extremely difficult for the average man to keep a milking machine in such a condition that it does not contain bacteria and thereby frequently increases the bacterial count of the milk over that from the use of the covered pail?

MR. J. A. GAMBLE: I think that the bacterial count of milk produced by the milking machine will have some relationship to the efficiency of the man behind the machines, as to whether he keeps the machine clean or not.

MR. SHEAR: So it again comes back to the individuality of the man?

MR. J. A. GAMBLE: Yes, sir.

PRESIDENT JOHN M. DENNIS: Gentlemen, don't hesitate now to embrace this opportunity.

A MEMBER: Do you think, if the same care be exercised with the machine and without the machine,—is the bacteria likely to be much different between the two,—say the same care in every way possible?

MR. J. A. GAMBLE: If a man understands the essentials of clean milk production and can produce a milk with a very low bacterial count with hand milking, he should also, by taking pains to see that the milking machines were cleaned so there would be no inoculation of bacteria from them, be able to get a low bacteria count with the milking machine.

PRESIDENT JOHN M. DENNIS: Gentlemen, are there any more questions? At this morning's session an old friend of mine from Frederick County, Mr. Rush Lewis, stated that one of the surprises of his life was the difference in the cows from the time that he bought at the other fellow's farm and that same cow after he had milked it. (Laughter.) I don't think there is one of us in practical work that has not had that brought home to him very frequently, and it is really with great pleasure that I see on the list here as a topic: "The Selection of the Dairy Cow," by a gentleman whom I know will give us lots of help. I have the pleasure of introducing Mr. Frederick C. Minkler, Professor of Animal Husbandry, of the New Jersey State College of Agriculture. (Applause.)

THE SELECTION OF THE DAIRY COW.

By FREDERICK C. MINKLER, Professor of Animal Husbandry.

New Jersey State College of Agriculture.

Mr. President and Members of the Maryland State Dairymen's Association:

It is, indeed, a pleasure to meet with men and women who have a common interest in agricultural endeavors. I am convinced that the man who is producing milk on his farm today is confronted with a great many problems that require careful and serious thought for their solution. The agitation that has prevailed during recent years throughout the eastern district directed by the farmers for the purpose of securing a reasonable price for their commodity is now being generally supported by all producers, and in return they have signified their intention of producing products that will meet the exacting demands of the public. There has been a tendency on the part of our dairy farmers to divorce production from reproduction. Rather than produce the bulk of the animals on their farms to replenish their herds, they have relied upon the dealer to replace such cows at it was necessary to remove for one cause or another, and as a result contagious abortion or tuberculosis has been introduced, and these today are the two limiting factors in milk production.

A successful dairyman must insist that every animal in his herd be a profitable producer of dairy products. There is difference of opinion as to the most reliable method of choosing between a producer and a non-producer. One dairyman may depend upon the breeding of a certain individual to be sponser for her qualities as a producer of milk; while another will rely largely upon the individuality of the cow, and pay very little attention to ancestry or breeding. I share the belief that there is only one safe way of determing a profitable cow from an unprofitable one, and this involves the placing of the cow in your dairy stable and determining by means of the milk scale and the Babcock tester just what she will do under the conditions of labor, feed and management that prevail on your own premises. Profits in milk production should not be

based on what Sophie 19th of Hood Farm might produce under conditions that obtain on this farm, neither must we rely on records that are the result of seven-day tests. The farmer's profits in milk production must be secured from the sale of milk produced by the average run of cows that he maintains on the farm. Therefore it is of minor importance to know what a cow has done on another man's farm if the present owner is not in a position to offer the same, or rather improve the conditions on his own premises that will prompt the individual animal or group of animals to yield their products at a profit. It is generally admitted that production with the individual dairy cow is based upon these forces that are the result of constructive breeding and skillful feeding. It is a combination of these two characteristics that enables the cow to produce milk or butter at a profit. I am a great believer in inheritance. I know that feeding qualities are inherited as well as breeding qualities. I know that there is a very close relationship existing between constitutional vigor and production. It is neither the largest cow nor the smallest cow that in every instance can be relied upon to produce the greatest amount of milk. It is the individual that has inherited perforce the ability to consume a large amount of food and convert this into milk promptly and efficiently.

We have been unable to determine exactly the relationship between size and function. Some of us believe that the small cow with peculiar conformation will act as an agency for the production of milk with the greatest economy. Others are equally insistent that the larger cow, possessing large frame and greater capacity is the more efficient unit. I am satisfied that we must rely upon the combination of qualities, and insist that they be developed in such a manner that they will co-ordinate if we expect persistent and consistent production. I have suggested that we must rely on average production on the average farm. It is not the cow that will produce 30,000 pounds in a year that is going to make the Maryland farmers rich; neither is the cow that will produce 25,000, 20,000 or even 10,000 pounds, but rather the individual that will produce persistently and consistently from 7,000 to 8,000 or 9,000 pounds of milk per year, and at the same time produce a calf; the result of maturing with a pure bred sire whose prepotency has enabled him to increase the production of his progeny.

Let us look at it from still another angle. I stated a moment ago that the tendency was to divorce production from reproduction. I believe most of us realize that the constructive, successful breeder and dairyman must produce on his own farm the units of his herd. The man who goes to the public sale to replenish his herd, the man who relies upon the cow dealer who brings animals in from another State, the man who assembles a herd in a common way, is the man who invites tuberculosis, contagious abortion and a number of other troubles that are holding the dairy industry, as far as milk production is concerned, down at the present moment, and I am just as satisfied in my own mind, and I hope I may inspire you with that confidence, that it is the constructive breeding work, based upon production and reproduction, that is going to put the Maryland dairyman on his feet. I have the greatest respect for a man who is a breeder rather than a cow dealer, and too many of us that are producing milk today are cow dealers.

It is necessary that every animal in our herd be efficient units for converting food products into milk if we are to meet the conditions imposed by the present high cost of cattle and the high cost of feed. I recall an instance related by Mr. Edward Van Alstyne, Director of Farmers' Institutes of the State of New York. He cites an instance of a certain farmer in his State that was maintaining a herd of sixty milch cows. It was proposed to organize a cow-test association in the community, and he was invited to become a member. He was not a believer in co-operative endeavors, neither did he have much faith in the proposed cow-testing association. He expressed the belief that he knew quite as much about his own herd as any individual could determine by visiting the premises once a month to weigh the milk or test the products. However, believing that the community's interests would be promoted by the association, and upon having it pointed out to him that the cow-testing association could not be organized without his support he reluctantly consented to become a member. At the end of the year the records submitted by the cow tester revealed the fact that only twenty cows in his herd were producing milk at an actual profit, and that the other forty were parasites or boarders. He commenced to do some figuring

for himself, and finally he determined that it would be to his advantage to dispose of all of the animals with the exception of the twenty cows that were working to his advantage, and found out that he could reduce his labor cost and his feed cost, and at the same time increase his profit by eliminating the unprofitable animals from his herd. The story of the cow-test association in any community is a repetition in a measure of the above incident. The farmer is enabled to determine exactly what his cows are doing, and he can distinguish between the profitable ones and the unprofitable ones. True the cow tester does nothing that the individual farmer could not do, for himself, but the condition is revealed that in the past he has not weighed his milk nor tested it for butter fat, nor kept accurate record of feed consumed, and, therefore, did not know exactly what conditions obtained on his own premises.

I hope that the dairymen in this district are supporting their cow-test associations, for I have every reason to believe that much good will result from the constructive work that is being advocated and accomplished through the channels of this agency. We must not be content, however, with mere production, we must insist that the profitable dairy cow produce at least 8,000 pounds of milk in a year, and within the same season produce a living calf. If we insist upon forcing cows beyond their natural production we must not be disappointed in the instance of abortion or a condition evidencing a lack of vigor and vitality among the animals in our herd. We must not divorce production from reproduction as both agencies must go hand in hand if we are to engage and continue in the dairy business.

Assuming then that the importance of selecting producing cows has been emphasized let us consider for a moment a few factors that are involved in the replenishing of our dairy herds. The crime of the dairy industry, and it might be applied quite as well to the live stock industry of this country, is the fact that the average live stock farmer underfeeds his young animals. He argues that since feed is high in price and labor is expensive it is economy to maintain animals without supplying them with an abundance of food. Consequently he dwarfs the development of his calves, or his colts

or his pigs, and when they are old enough in months to be producers it develops that they are not profitable producers of the particular product desired. It is true invariably in the raising of colts; it applied generally in the production of dairy calves or heifers, and it is not absent in instances where pork is produced on a fairly extensive scale. It is generally believed that an animal should gain one-half its weight the first year; for instance if it is desired to produce at maturity a 1,600-pound draft gelding the owner should insist that the colt weigh at least 900 pounds when he is a year old. If it is desired to produce a Holstein cow that will weigh when mature 1,400 or 1,500 pounds it is not unreasonable to expect this heifer calf to weigh 700 or 800 pounds when one year old. It has been my observation that unless this quality of size is obtained during the first year it is seldom obtained at all. Surely there is nothing to be gained by underfeeding animals intended for use on a dairy farm. If a heifer calf is worth raising at all it is worth raising well, and unless the animal can be developed normally it is certainly false economy to rely upon some inherited quality to perpetuate function that is not supported or advanced by the proper standards in feeding and nutrition.

It is my belief that we should grow on our own farms the bulk of the heifer calves that will be required to replace cows that are removed for any reason. I recall an instance that occurred at the Experiment Station several years ago. The late Doctor Voorhees made it a practice to go through the dairy barn almost every evening, and on one occasion he sighted a Holstein heifer that was carrying a relatively large amount of flesh, and he remarked that he doubted very much the advisability of maintaining her in such high condition, adding that she evidenced more beef-making characteristics than milk-making propensities, and suggested that she had best be sold as beef. This particular heifer was out of a cow that was more than an average producer, and I argued that in time she would develop into a very useful dairy cow. Shortly after this incident he went abroad, and did not return to the stable for more than a year. On the occasion of his next visit to the stable his alert eye caught sight of a Holstein heifer that had recently freshened, and was at that time yielding

fifty-five pounds of milk per day with her first calf. He at once inquired as to where that heifer was purchased, and this inquiry met with my response that this individual was the one that he condemned more than a year ago as one scarcely promising as a profitable producer of milk. He was amazed beyond description, and admitted that he had been deceived. I had faith in this heifer because her dam was a producer, and her sire was a tried sire; one whose heifers invariably produced more milk the first year than their dams had produced during their second, and in some instances third and fourth period of lactation. This is the one evidence of constructing breeding that should obtain on a farm where dairy animals are being produced.

I believe, therefore, that the dairy farmer must rely upon his own herd to produce calves to replenish this herd. I believe that the calf must be well grown during the early stages of its growth in order that it can obtain normal development. I believe that the heifer should be fed some grain throughout its growing period, and if she is more or less mature and promises normal growth and size she should be mated to a tried sire, and following this mating should be liberally fed in order that every support possible may be given to develop the inherent feeding qualities and production qualities that lie in waiting. Even though she may put on a surplus amount of flesh during this period it will do her no harm, but rather evidence those feeding qualities that are absolutely essential in all profitable dairy cows.

The dairy cow is but a machine whose function is production and reproduction. It is her business to convert farm grown products into food products more concentrated, and hence more valuable than when given her as raw material. It is man's business to supply food or fuel units for this machine. Sometimes it is the cow's fault, again it is the man's fault that the machine gets out of order, or that the fuel is too expensive or not adapted for use in the machine. Sometimes chemists find elements in feed that cows cannot, and the man is deceived and the cow blamed. This is not apt to be the case if the bulk of the food products are home grown. The problem of the dairy farmer today involves the working out of a system of crop rotations that will enable him to elimi-

nate, for the most part, the purchasing of feed stuffs at high cost, and make it possible for him to produce on his own farm the every day feeds that are necessary for making milk and growing calves. To this end the dairy farmer must consider the points involved in practical herd management, with proper consideration for efficient crop rotations and yields.

Practical herd management involves consideration of those factors that determine efficiency, economical production and reproduction, vitality of the cow and satisfaction of the man. In other words it is a matter of giving attention to the wants of the cow in accordance with the judgment of man. Successful crop rotation does not necessarily mean the making of two blades of grass grow where one grew before, but rather involves the growing of such crops as are adapted both to the soil and the cow; crops that will supply the necessary food nutrients in palatable form in abundance at low cost. They must be in their prime at a season of the year when they can be utilized or stored to the best advantage. It is clearly possible for a cow at ease to give forty pounds of milk per day at a greater profit than would result in case she gave fifty pounds of milk per day under pressure. The difference would mean not only the cost of the food units necessary for forcing, but the cost to the cow physically. She is asked to functionate under pressure, consequently nature's response might entail taxing both her vitality and her reproductive function. Increased production must be bred into a cow's veins rather than forced through her digestive system by means of expensive concentrated feeds. True enough the world-famed cows reach the zenith of their popularity by performing extraordinary feats in the way of milk or butter fat production. The records have no doubt been brought about and made possible by the feeding of large amounts of feed, regardless of cost to the owner in dollars and cents, or of the cost to the cow in vitality, udder trouble or reproductive function. In other words, this dairy cow is a bulletin board, advertising not only the breed, but the breeder or the owner, and goes to show some of the great possibilities and wonders of the modern dairy cow.

This question of advertising, however, is not the chief problem with the dairy farmer. The achievement of making world-

beating records should not be the aim of the practical every day farmer whose bread and butter depends upon the net profit resulting from his dairy activities. For him it is rather a problem of making forty pounds of milk per day with a profit in cold cash, rather than uncovering a one-hundred pound cow for the sake of a writeup or special publicity. He cannot feed his family on newspaper notoriety, but he can satisfy his youngster's wants on economically produced milk and its products.

What does this all mean? Stripped of all descriptive terms, it means that the dairy farmer of today must select as his machine a cow that can produce and reproduce. The milk itself must pay a real profit over the cost of feed, and the heifer calves that she reproduces must carry on the flag of function, developed to an even higher plane of efficiency. This is the first unit.

This cow and her calf must be fed A. B. C. food stuffs. A for alfalfa, B. for bran and C. for corn and corn silage. C. might stand for cotton seed or clover, and B. might stand for buckwheat middlings, but A. must spell alfalfa. The color of the cow does not matter much. It is what she does, rather than what she appears to be that counts. She might please the eye as well as the pocketbook, but the twinkle in the eye of the man who pays the bills is focused largely by the new dollar in the pocketbook. If we as dairymen could get down to brass tacks and rely chiefly on the food stuffs that grow on our own farms, and be satisfied with a reasonable record at a clear profit, rather than an extraordinary record at a possible loss, it would seem to me that we might recover from many of the perils that prevail. Milking cows don't need as much protein as some of us imagine.

Our most successful dairymen of today have silage in abundance the year around, in fact it is probable that profits resulting from the feeding of silage are greater when it is used during the summer months, than when it is fed exclusively during the winter months. In any event it is the most useful when it supplies the greatest need. If there ever is a time in the cycle of a cow's lactation period when she needs silage it certainly must be welcome in July and August, when pastures are short, the flies are annoying and the sun is scorching hot.

Silage, therefore, can cool the system in summer as well as keep it warm in winter, and one is just as essential as the other. The story of alfalfa repeats itself. It is a companion crop with corn in the field, and a sister feed with ensilage in the barn. It can be grown throughout the East if farmers will apply lime and phosphorus in abundance, inoculate thoroughly and keep the fields intended for seeding free from weeds and clods. What a wonderful soil builder it is, and how corn or anything else does jump and yield when alfalfa sod is plowed under. It pleases the cow, the soil, the man and the banker. What more can one ask? It is art and science in happy combination.

Given then a cow worthy of the name with a record of efficiency, production and reproduction in her pedigree; 12 pounds of alfalfa hay nicely cured, sweet and bright; 35 pounds of ensilage nicely preserved, tasty and succulent; 6 pounds of corn in the meal; 2 pounds of oil meal or cotton seed meal; 2 pounds of buckwheat middlings, with a man who knows when to substitute a little malt sprouts, beet pulp, or bran or kindness, you have a machine, a mechanic and fuel that ought to make forty pounds of milk per day at a clear profit with the manure and the calf as a dividend. Of course, you say this would eliminate timothy hay, but this ought to be done. You will say that it will eliminate ten thousand pound averages, and it probably will; you say that it will eliminate the forty-pound butter records, and it will, but it is my judgment that it will make the cow live longer; that it will enable her to raise a family not only in the barn, but in the home as well.

The system suggested is nothing more or less than putting the dairy industry on a unit basis. It is time the cow and the man and the farm were tied to utility. It will eliminate the frills and some of the bills; it is putting the dairy business on its own feet, and knocking out of line the unscrupulous cow or feed dealer and the ambitious transportation and advertising agencies, that would lead us to believe that there is a wonderful something in a mysterious nothing.

If I am not mistaken Mr. Samuel Shoemaker is making signs at me; at least I imagine he is, and assume that he wants me to keep my promise not to extend these remarks unduly.

I am taking the liberty of suggesting to you, Mr. President, that in case there are any members here who have some particular problems that they are interested in, which a discussion might help solve, possibly this would be the best means of continuing our meeting.

A Member: Professor Minkler you have classified the feeding stuffs for us, and I quite agree with you, but I have a field that I cannot put out in plain old oats, and I have been wondering if it would pay us to buy them at their present cost.

Prof. Frederick C. Minkler: My last impression of the price of oats was that they were selling for a penny apiece (laughter), and I do not believe we can afford to feed them at that price. However, you are right; I do not believe that there is any feed that will put mettle and vigor into growing stock to the extent that prevails when a combination of oats, bran oil meal and alfalfa are supplied. I doubt very much if there is any feeding stuff that will replace oats in the ration for young colts, or young calves, or even young growing pigs intended for breeding purposes, and the only item that would limit their use would be the question of cost. For New Jersey conditions, and I dare say that they are not dissimilar in Maryland, I believe that it is good judgment to grow oats and Canada Field Peas in combination. Oats when grown by themselves do not yield abundantly, and we have found it a distinct advantage at the Station to rely on oats and Canada Field Peas as a source of green forage for our dairy herd, and in the event of an abundance of this crop we cure it as hay and feed it to idle horses during the winter months. It makes a splendid combination roughage and green feed, and I believe that it is one of the best feeds that we can use.

A Member: Mr. Speaker you did not mention cow peas or cow pea hay.

Prof. Frederick C. Minkler: Possibly I overlooked the fact that I was in a section of the country where Canada Field peas and cow peas grow abundantly. We have found cow peas to be very well adapted for feeding dairy cattle, but its yield per acre is relatively low, and, therefore, we have concluded that corn will supply more useful nutrients per acre than either soy beans or cow peas, and consequently have

relied largely on this chop to supply our silage and succulent feed. Cow peas as you know are a hot weather crop and a short season crop; two conditions that are quite objectionable. An attempt was made at the New Jersey Experiment Station three years ago to produce soy beans rather extensively. It developed that the entire rotation would of necessity have to be changed in case this crop was to become a factor, that special machinery was necessary for planting, harvesting and thrashing, that the men objected to working with a crop as dusty as the beans, and when the cost of production was considered, and the relatively low yield considered there was difference of opinion as to whether this crop had a very bright future in our district. It is admitted, however, that soy beans and cow peas are high in protein, and if they can be produced in your district economically, if the yield is abundant, and the cost not too great they would increase the feeding value of any ration that they became a part of.

A Member: What do you think of mixing soy beans with corn in the silo?

Prof. Frederick C. Minkler: There are two objections to this practice. In the first place soy beans and corn are not companion crops; one of necessity must be planted early in the spring, and the other late in the summer. We attempted two years ago to mix our corn and soy beans, and to grow the crop in the same field. There was difficulty in cultivating the corn. There was more difficulty experienced in harvesting the crop, and it was determined that there was very little advantage to be gained by the adoption of this method. I should recommend, therefore, that if it is desired to produce corn and soy beans for the silo that the soy beans be planted by themselves following rye or wheat that may be used for a bed or plowed under as a green manure crop; that the corn be grown by itself and that the mixing be done at silo filling time in the following manner: Unload four tons of corn and run this through the ensilage cutter and follow this with one ton of soy beans. This will yield a silage that will be high in protein, that will not ferment extravagantly and that will be more palatable and succulent when used for feeding cows during winter months. However, I believe that corn silage is more economical than any combination of corn and soy beans,

and furthermore, I am convinced that summer silage is more profitable than forage crops, and that it is quite as important to have silage to keep the cows cool in summer time as it is to have silage to keep them warm, so to speak, during the winter months.

A Member: What do you think of peanut meal and hominy chop?

Prof. Frederick C. Minkler: Within the last two years there has been placed upon the market two products that are relatively new to the live stock feeder; I refer to peanut meal and cocoanut meal. Our dairy department conducted an experiment last year to determine the relative efficiency and comparative value of peanut meal and cotton seed meal, and the result suggested that one was about equal in feeding value to the other, and that peanut meal at the present cost was more economical. It was found to be less constipating than the cotton seed meal, but scarcely as palatable, and I believe that it will eventually find a place in an economical dairy ration. The cocoanut meal was scarcely as high in protein as the peanut meal. It did not appeal to the cows as favorably, and we shall require additional experimental data in order to answer definitely questions concerning the relative merits or comparative value of these products. I should be inclined to advise that they be included in a dairy ration when they can be purchased at a cost of less than $35.00 per ton, providing they analyze more than this amount of protein.

Concerning the use of hominy meal I believe that this is more economical at the present time than corn meal, but there is a practice among millers to include a great deal of cob meal in the hominy meal, and this as we all know is neither nutritious nor palatable.

A Member: How does it compare with cottonseed meal for feeding dairy cows?

Prof. Frederick C. Minkler: I think that in combination with cottonseed and corn meal it would constitute a very efficient ration. There is considerable objection to feeding rather extravagant amounts of cottonseed meal; it being claimed that it is constipating, and that when fed in large quantities may result in expulsion of the fetus. I believe this condition would be true in any concentrated ration fed in large amounts,

and for my own part I believe that cottonseed meal, providing it is fed in conjunction with corn meal, bran and some legume hay, is by all means the most desirable and economical source of protein for dairy or steer feeding. In a great many instances it has developed that chemists are able to identify nutrients in feeding stuffs that the cows themselves cannot find. I think this is scarcely as true with cottonseed meal as obtains in other instances where mixed feeds are relied upon to supply the ration.

Mr. President: I am very glad of this opportunity to meet with the dairymen of the State of Maryland. I believe that we are facing conditions that require careful thought and co-operative effort. I dare say that feed will increase substantially in price, cows will advance beyond any figure that we would dare mention at this time, and eventually the price of milk will increase, but not in proportion to the increased cost of production. Therefore, we must insist that every animal in our herd is an economical producer of milk. We must make sure that our herd is not being depreciated through the ravages of tuberculosis or contagious abortion. We must keep out of the divorce courts with our dairy herds; by this I mean that we must insist upon reproduction as well as production, if it is our desire to continue in the business successfully and operate it at a profit.

The Treasurer submitted the following report:

Baltimore, Md., November 17th, 1916.

Maryland State Dairymen's Association,
In Convention Assembled.

Herewith enclosed please find Treasurer's report as of November 1st, 1916, which shows that on November 1st, there was in our Treasury, $110.09. However, the expenses have but begun and I submit as estimate of the revenue and expenses for the year 1916 with estimated income of $850.00.

You will notice in this and in past reports that the City Dairy has been a subscriber to the Maryland State Dairymen's Association of very large amounts.

The Maryland State Dairymen's Association is founded primarily for the benefit of the producing farmers, and they show their appreciation of that fact by joining and paying their Membership dues of $1.00 per annum and by entering Clean Milk Contest; by joining Cow Testing Associations and generally placing his business on its highest and most profitable level.

I regret that I can not be present at the meeting and deliberations of the Association, owing to most important matters happening in Washington.

The Maryland State Dairymen's Association,
ASA B. GARDINER, JR.,
Treasurer.

TREASURER'S REPORT.

Estimate of Expenses and Revenue for the year, 1916-7.

EXPENSE.

To Prizes—Clean Milk Contest	$195.00
To Expenses—Clean Milk Contest	150.00
To Prizes—Cow Testing Association	75.00
To Formation—Cow Testing Association	75.00
	$495.00
Cow Exhibit and Demonstration, 1916—Expense of material and labor, estimated	200.00
General office expense for year 1916-17, estimated	50.00
Deficit of 1915, estimated	169.91
	$914.91

INCOME.

By City Dairy, subscription	$250.00
By Western Maryland subscription	25.00
By Hendler Creamery	25.00
By Memberships	50.00
By State Appropriation	500.00
	$850.00
Deficit	64.91
	$914.91

RECEIPTS to November 1st, 1916.

By Balance, H. K. Harrison, Treasurer	$46.28
By Interest, Equitable Trust Co	5.00
By City Dairy Co	250.00
By Hendler Creamery	10.00
By Western Maryland Dairy	25.00
	$336.28

DISBURSEMENTS.

To Maryland Grange, Messenger Printing	$43.75
To Cost of 1915 Exhibit	172.44
To Rent, Odd Fellows Hall	10.00
	$226.19
Balance, November 1st, 1916	110.00
	$336.28

November 1st, 1916.

ASA B. GARDINER, JR., *Treasurer.*

President Dennis appointed the following members as the Nominating Committee: A. W. Nicodemus, J. W. Beacham, Jr., Dr. Herbert Hoopes.

The Nominating Committee selected the following to serve as officers for the ensuing year: D. G. Harry, President; R. Smith Snader, Vice-President; W. A. Wheeler, Treasurer; R. H. Ruffner, Secretary. Directors: James B. Robertson, Asa B. Gardiner, Jr., H. B. Witter.

The report of the Committee was adopted.

The following resolution in regard to the regional bank project was adopted:

WHEREAS the Congress of the United States has passed an Act known as the Rural Credits Act which provides for the establishment of twelve banks for the exclusive use of farmers, and having for their purpose the development of agricultural resources in different parts of the country.

AND WHEREAS Baltimore City, owing to her being the business and financial center of a large farming area comprising North Carolina, Virginia, Delaware, Maryland, Southern Pennsylvania, and indeed to a great extent the whole south, is an ideal location for the establishment of one of the above mentioned banks. And whereas, in addition to her being the business center, she has special facilities for making the new enterprise a success on account of her exceptional opportunities for handling the propaganda through the National and State Demonstration and Extension Service, and her proximity to the National Capital, where of course the Central Bureau will be located.

AND WHEREAS the need of labor and capital to restore the productive fertility of large areas of abandoned land; the need of encouraging the raising of table foods and milk prod-

ucts which must have readily available capital, and many other agricultural needs peculiar to the territory adjacent to Baltimore demand that an institution such as provided for in the Rural Credits Act be established in that City.

Therefore, be it resolved by the Maryland State Dairymen's Association that the Federal Farm Loan Board is urged for the reasons set forth above, and for many others of equal or greater importance, to establish one of the twelve Farm Loan Banks in Baltimore City, Maryland, as the most effective means for accomplishing the purposes intended by the Rural Credits Act.

The Secretary was instructed to send a copy of the above resolutions to each Member of Congress representing Maryland.

REPORT

OF THE

MARYLAND STATE BEEKEEPERS' ASSOCIATION.

EIGHTH ANNUAL MEETING.

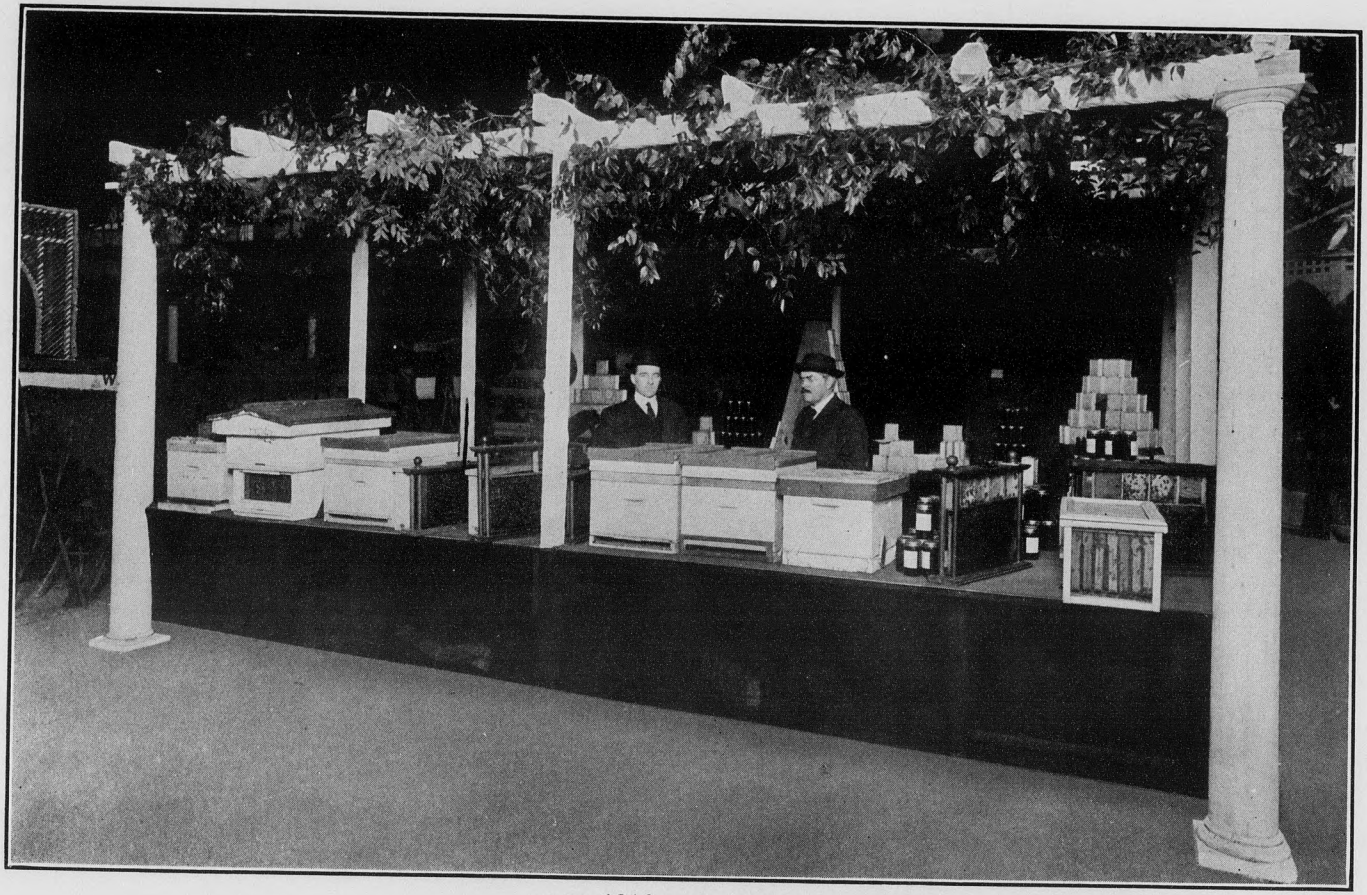
SATURDAY, NOVEMBER 18, 1916

In the absence of the President, John Thompson, the Secretary-Treasurer acted as Chairman of the meeting.

The first speaker was introduced by the Chairman as follows:-

We have with us Mr. Hawkins, of the United States Department of Agriculture, who has charge of demonstration in the fifteen Southern States. That includes Maryland. Possibly Mr. Hawkins will tell you something of just what they intend to do in addition to taking the subject of his address. It gives me great pleasure to introduce Mr. Hawkins. (Applause.)

MR. HAWKINS: Mr. Chairman, as to the work that should be done in the extension line in beekeeping, I would be very glad if you gentlemen would tell me what to do. It is an entirely new project. No work of the kind has been attempted before in the United States that we know of. It has been felt out a little bit in North Carolina, where Mr. Carr, of New Jersey, did four months' work in making a census of beekeeping in that State. The Bureau of Entomology in Washington, in cooperation with the States Relations Service, intends to inaugurate a campaign of education in the fifteen Southern States, working entirely in cooperation with the Extension Director of each State and, incidentally, with the County Agents in those States. Now you can see for yourself, that is rather a big proposition, and nothing of



THE 1916 BEE EXHIBIT

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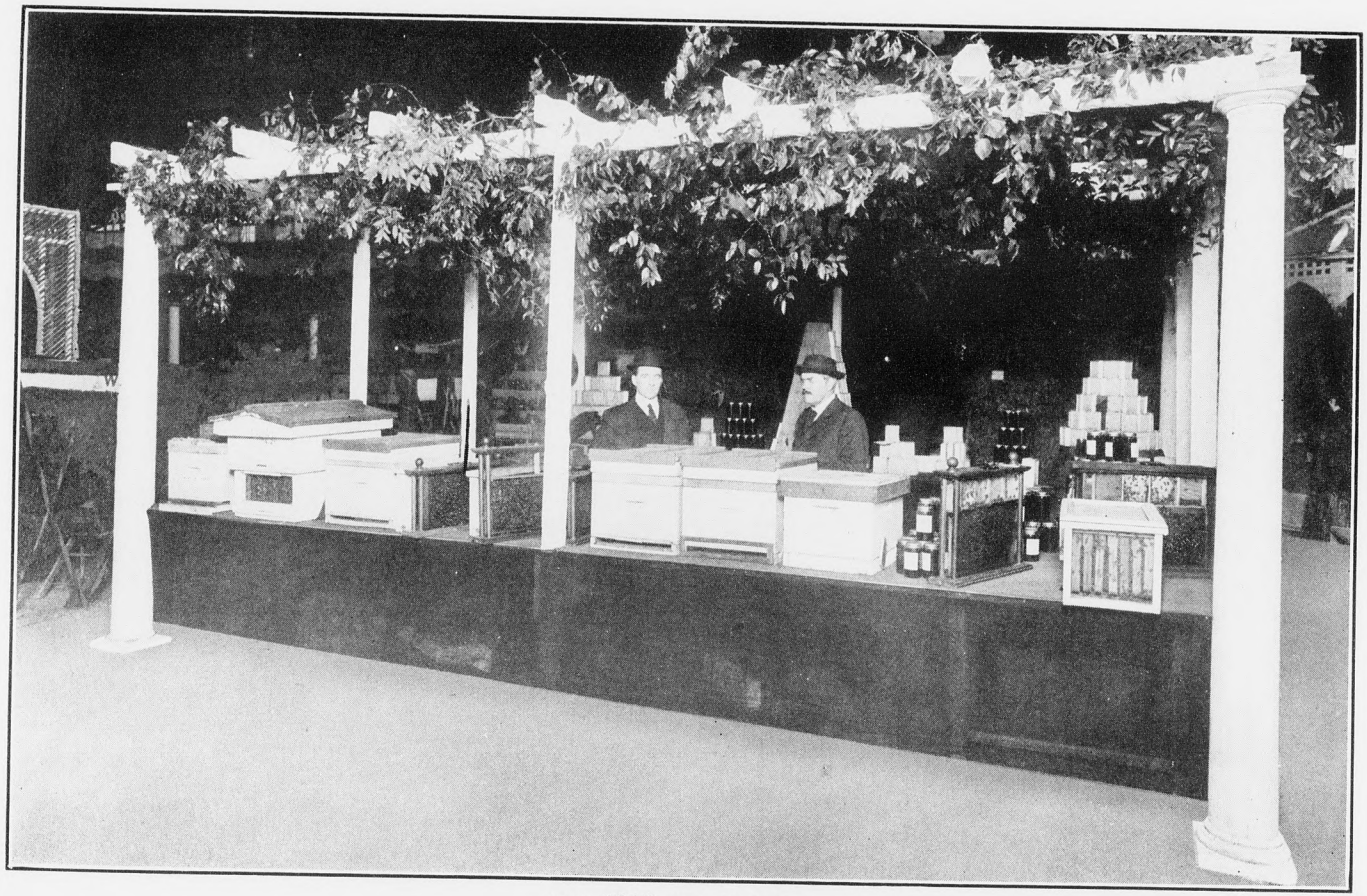

THE 1916 BEE EXHIBIT

the kind has been done. But two men have already been placed, Mr. Bartholomew in Tennessee, and Mr. Rea in North Carolina. Now their work will be largely, so far as we know, making a survey of beekeeping in those States. They will go around to the county agents where they have demonstrations, and especially where they haven't demonstrations, and acquaint beekeepers with special methods the Department of Agriculture thinks they ought to take up. It will not be possible to do this work yet except in those two States. My work for sometime to come, I expect, will be to go around and get acquainted with the Extension Directors and get at the best way of going at these projects.

Now my paper is entitled "The Possibilities of Maryland Beekeeping," and I am not going to assume that I know all about beekeeping in Maryland, for I don't, but most of the information I have here is taken from the census records in our office.

THE POSSIBILITIES OF MARYLAND BEEKEEPING.

KENNETH HAWKINS, U. S. Department of Agriculture.

Beekeeping on a modern basis is in its incipiency in most of the South. However, the time seemingly has arrived when southern beekeepers are evincing an interest in placing the industry on a plane to better combat bee disease and produce a more marketable grade of honey. This is certain to increase financial returns commensurate with the energy expended in so doing and to make southern beekeeping in general as valuable as it already is in certain parts of the South where bees have proven most profitable.

You as beekeepers, familiar with other agricultural pursuits, can tell in how many other lines of farming a profit of 50 per cent on the capital invested can be realized. Needless to say, there is none, nor is there any other agricultural pursuit open to you, in which the amount of capital necessary to a start, even on a considerable scale, is so low. From the Census figures it appears that the average value of a colony of bees in the South in 1910 was $2.35, which is certainly high for bees in other than standard movable frame hives.

However, the same figures show that southern beekeepers realized a return of $1.25 per colony for honey and wax, or more than 50 per cent. on the capital invested. Can you do this in other lines of agriculture? Remember too that by modern methods of beekeeping the yield per colony in selling value is $5.00 and up for many beekeepers in various parts of the southern States.

The office of Extension Work in the South has begun a campaign of education among Southern beekeepers, in cooperation with the Bureau of Entomology and has already three men in the field. The information available in the records of the Bureau of Entomology, as well as the personal knowledge of its men, is always open to the beekeepers and it is hoped that the work will result eventually in demonstrations so widely distributed in Dixie as to raise southern beekeeping generally to the paying proposition that it is in the hands of a few.

Maryland certainly has about as good a territory for bee pasture as other southern States considering length of season and rainfall, and your association, which I understand is relatively new, should soon be able to make your State one of the most important in the South in agriculture. Census figures available on the industry show that Maryland reported 23,156 colonies of bees in 1910 on 4,186 farms making the average number of colonies per apiary in your State only five. However, it appears that the amount of honey produced per colony was larger than that of any other State in the South with but two exceptions. Either Maryland beekeepers are better beekeepers or the honey-producing flora of your State is on an average more abundant than in the other States. The number of farms reporting bees and the number of colonies reported shows a decrease of 18 per cent. each in the last Census year, but the decrease in the amount of honey produced is only about one per cent. giving further food for thought as to the reason. It would appear from this that possibly your crop does not vary so much with the season as in some other localities. It appears that the average number of pounds per colony increased in 1910 about 22 per cent. while the wax production decreased about 44 per cent. Probably wax production is at its low ebb in Maryland be-

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cause most of the honey sold locally is not extracted honey. The value of the crop in 1910 compared with the previous Census year was similar to the increase in honey produced, about one per cent.

Apparently the decade between 1900 and 1910 saw honey becoming more and more of a crop on which one could depend for some income, because bees were being valued 40 per cent. more highly per colony at the last Census year than in the previous one. The crop value also showed an increase, this amounting to 21 cents per colony, due probably to the similar gain in pounds per colony produced. Maryland showed a gain in the value of honey and wax per colony in 1910 four times that of the average for the other 14 States of the South, and a similar gain of almost 50 per cent. in the money value of the bees per colony over the balance of Dixie.

While these figures show a healthy status of beekeeping in Maryland, they also show that beekeeping is as yet not an industry comparable with other agricultural pursuits and that it is only in its infancy when compared to apiculture in the South. It appears that Maryland reported only about one per cent. of the bees in the southern States and only produced about 2 per cent. of the honey crop of the southern States in the last Census year. This naturally shows that the crop was worth only about 2 per cent. of the value in money of the bee products produced in the 15 southern States in that year.

While these Census figures are sadly inaccurate as to the total number of colonies in a State, because only bees on farms are reported, they are fairly accurate in the territory they do cover and entirely worthy of consideration as a basis for comparison, since all figures available are from the same source. This means then that Maryland, among southern States, had in the last Census year less bees than any other State except Oklahoma, reported less bee products than any other State except Oklahoma, and that Maryland farmers naturally derived less financial return from bees than any State except Oklahoma.

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Not the least of the interesting features of beekeeping in Maryland is that of the status of disease. The records of the office of Bee-Culture Investigations in Washington show that disease, either American or European foulbrood or both, exists in nine of the 24 counties of your State. While this is a certain knowledge of disease existence in nine counties, the inference should not be drawn that disease does not exist in some or all of the other counties. More than likely, by this time, it does exist in a number of others. The spread of disease is often rapid and while it seems to be situated principally in the western part of the State, with single exception of Caroline county, considering the records of the office as a basis for location, it seems worst near the city of Baltimore. This, however, is not unusual since disease often is worst in any State near large cities, especially in its incipiency in that State. This is probably due to the spread of disease through shipment of honey.

There are a number of methods immediately available in fighting this disease, principally among which is individual work at home and in the vicinity each of you lives in. The Bureau of Entomology is beginning educational work in the South this year and a portion of this may be done in your State. While this will help, it will be only a "drop in the bucket" in fighting disease in Maryland. The distribution of information as to the recognition and treatment of bee diseases is already in the hands of the office of Bee-Culture Investigations and free literature will be sent if members of this association will furnish the office of Bee-Culture Investigations of the Department of Agriculture with names of beekeepers in whose apiaries disease may exist.

But of all things, each member of your association may be a better beekeeper, especially where bee disease is concerned, and by your own better practices and a little individual missionary work among your beekeeping acquaintances, who are not fighting disease, beekeeping in Maryland may easily become more remunerative and more worth while.

CHAIRMAN E. N. CORY: Gentlemen, this paper is open for discussion.

(Here followed a lengthy discussion of the paper and the matter of bee disease.)

MR. HAWKINS: For sometime our Department has furnished free information as to what disease exists if you send them samples from the comb. If you will write in, you will be furnished with a small box and a frank, and you can send in as many samples as you wish. Diagnoses will be made there by an expert, who will determine exactly what your disease is and notify you. That is entirely free. All of you can take advantage of that and we will be very glad to have samples. Every beekeeper should have a knowledge of the diseases himself and recognize them when he sees them.

CHAIRMAN E. N. CORY: Gentlemen, if there is no further discussion of Mr. Hawkins' very interesting paper, we will pass to the next paper,—"Failures in Beekeeping," by our Vice-President, Mr. N. W. James, of Baldwin, Maryland. It gives me great pleasure to introduce to you Mr. James.

FAILURES IN BEEKEEPING.

By MR. N. W. JAMES, Baldwin, Md.

I haven't prepared a paper for this, on account of my eyesight not being very good. However, a few remarks in regard to failures in beekeeping. I was looking around on our Association just now, and I was wondering if it would not be a failure before very long. I remember five years ago, when we started, we had fifty to seventy-five at every meeting. I remember one year we had our pictures taken, and there was quite a large crowd, and it begins to look as though we are going to have some failures in regard to this Association. I don't know why it is that there are not more here today. I don't know why the Society isn't more of a success in attendance than it is.

I have taken this subject in regard to failures in beekeeping. You have all, of course, seen the picture of a man with blasted hopes, the man who started out in the bee business, that got a number of colonies and made a failure, and after two or three years he sat down on one of his hives, with tears rolling down his cheeks, and sold his apiary and fixtures

cheap. That is the picture of a man with blasted hopes, a man who has made a failure in beekeeping. Now there are a good many of that same class in the South and around the State. I was told here in the spring by one of our men that there were about twenty beekeepers in and around the city and State that wanted to sell out to him after they had purchased their supplies there and started out in the business. After a year or two of failure they wanted to sell out. They had gone into the Blasted Hope Company.

Now there is a reason for this. All of these people started out and only stuck at it a year or two. There's a reason. Now why is it? Not because there is no nectar in the flowers. We all know that isn't true, because I feel there is not one-tenth the nectar collected from the flowers in the State of Maryland. Mr. Hawkins told us about the possibilities of beekeeping in Maryland, and I think he is right, and these men failed not because nature has not done her part along that line. The honey goes to waste simply from lack of bees and beekeepers to get it. I believe there is honey enough in the State of Maryland to supply every table in the State. I have no doubt about that. The fact that honey can be sold has been illustrated here at different times. Almost any kind of honey can be sold. Even honeydew, which is considered almost worthless by some beekeepers,—brought me thirteen cents a pound. So it isn't from lack of nectar and not because the honey cannot be sold that these failures come. This gentlemen I spoke of told me one man offered to sell him seventeen colonies for $2.50 for the whole lot. He was sick of the business. Think of it! Now why is it that they get sick so quickly after starting out? I think often it is because they are unqualified for the work. I don't think every man or woman can be a beekeeper. I don't think that is possible. I think there are people fitted for different parts of the world's work, and I don't think a man intended for a carpenter ever would make a successful beekeeper or a dairyman. I think a man must be qualified for his work and must have some love, outside of the mighty dollar, for the work; must have some special liking for bees, for the joy which it brings to us in the work with our bees, a certain

fascination which I think men in other professions and occupations don't find. So a man, in the first place, must have that love for the work, and if a man invests in bees just simply from the dollars and cents standpoint, I think, as a general thing, that man will be a failure, although there is money to be made out of it.

Then the lack of faith in bees. An old colored preacher was one time asked by his congregation to define faith. After thinking over the matter for a little while, he said: "My definition of faith is this,—taking hold, holding on, and never letting go." Now I think that's a good definition, and you take the beekeeper who has faith, he is going to succeed in it. The same way with every other occupation or profession in life. If we go at it with faith, we will succeed.

Now there is a great reason for a person having faith in the bee business. The statistics tell us that in the United States there are produced each season $20,000,000 worth of honey. A million men are engaged in it in the United States. So there is a reason for having faith when so many have accomplished so much in the work.

So there is no reason for a man to be discouraged or to fail unless it be some reason on his own part. If a man goes at a thing with a determination to succeed, he is apt to succeed. I have often heard my father tell a story about a man in Harford county in the early days of the use of lime for agriculture. The farmers commenced to use it, and this particular man, of rather rough character, started to put lime on his farm. Of course, he was poor and had to go in debt for the lime. The first season he used it he had no results. However, he determined to stick to it, and he tried it the next season, and put lime on the farm with the same results. He got worse and worse in debt, and some of his creditors came in; he couldn't pay his bills, and finally he landed in jail. The boys wondered then what he was going to do, and he said: "I am going to still put on lime." "But you are in jail," they told him, "and you are apt to lose your place." "It makes no difference," he replied, "lime put me in, and lime will have to take me out." I think

that a man who goes at a thing with that determination will surely succeed. I read a story one time of a gentlemen in the army, whose name, I think, was Robert Bruce. I don't remember what army he belonged to, but he was fighting against the French. He had been defeated six times and had to flee from the battlefield to save his own life. He went into a forest for refuge over night, and had to sleep in a log hut with some rafters overhead, and in the morning he looked up and watched a spider make six unsuccessful attempts to attach his web; the seventh time he was successful. Bruce felt he could surely do as well, and he rose up and went out and defeated the French after all. Now any man ought to be able to do as well as the spider. But I know of some beekeepers who don't seem to be able to do that well.

Then another reason why there are so many failures, I think, is from lack of education along the line of bee-culture. A man who starts out on this ought to educate himself from journals and books that are today on sale everywhere. One reason why some fail is because they merely take their own judgment and don't read up on the subjects, and finally they are forced to quit and go out of business. A man ought to educate himself.

Now, after speaking of the men who make an entire failure of it, I might talk for just a few moments of the failures that the bees have. We all have a certain amount of failures in our work. We often fail to secure a good crop of honey. Sometimes the beekeeper fails to get proper money. In some cases a man could have had a good crop of honey if he had been ready for it at the proper time. I think "preparedness" is a great word. It seems to me a magic word, a word we have thought a great deal about lately, and I think the lack of preparedness on the part of us who are beekeepers is why we fail to secure a crop of honey. A man who has neglected to order supplies, who has not built up his colonies ready to meet the honey harvest is almost sure to make a failure of it, even though a splendid honey flow season comes. And even if only a moderate flow, a man of that character has a poor crop of honey anyhow. In all my

experience in beekeeping of over twenty-five years I have only seen one season when beekeeping didn't pay. The lack of preparedness, as a general thing, is the trouble.

Then failure to control the swarming. I think that is one thing that bothers the beekeeper about as much as anything else. I am sorry Dr. Phillips is not here to talk to us on that. I fail sometimes myself to control swarming, especially this past season, which has been one of the worst I have had. They seemed to violate every rule of beekeeping almost in order to carry out their purposes in swarming. A man who knows how to control swarming can secure a crop of honey when others fail.

Then another failure is the failure to secure the best price for our honey after we have a crop. The main thing is to get our honey in shape and get it on the market at the right time. In the first place, honey must be put up in clean packages,—the sections ought to be sandpapered,—and it ought to go on the market early, or we will make a failure in securing the right price for it. This past season honey has sold fairly well. I generally get my crop on the market about the middle or latter part of October. If it went on the market sooner it would stand a better chance. (Applause.)

CHAIRMAN E. N. CORY: Mr. James' paper is now open for discussion.

(Here followed a general discussion of Mr. James' peper.)

CHAIRMAN E. N. CORY: Is there any further discussion on the matter of failures? We have two topics before us. What is the best method of wintering, and when and how should feed be given in the spring? Dr. Phillips has been working for several years on wintering. Mr. Demuth, as you remember, gave us some very interesting data last year with regard to the temperature of the cluster, and I put in this question because I hoped Dr. Phillips would be able to tell us something more about what they are doing at Drummond. He told me they were trying some packing work, and I hoped that he would tell us something about that as it is particularly interesting to us, since we are in the same neighborhood where the work has been done and the knowledge he

gained at Drummond certainly ought to be applicable to the average farm in Maryland. I leave these first questions now to Dr. Abercrombie for discussion.

(An animated and thorough discussion led by Dr. Abercrombie was had on the two topics suggested. This brought many valuable personal experiences and practices which ordinarily would not be discussed in a formal paper.)

BUSINESS SESSION.

Report of the Secretary-Treasurer, E. N. Cory.

The exhibit this year has been most instructive and attractive. The booth constructed by our members has received much favorable comment by visitors and the management of Maryland Week.

The extraction of honey under the supervision of Mr. Crocker has been decidedly instructive and the Association is indebted to him for the efforts he has expended upon this demonstration.

In connection with the awards which I will read as the first announcement, Dr. Phillips has asked me to explain his attitude in the judging. Primarily the show should be an advertising medium to educate the public to consume more honey. Therefore, the greatest care should be exercised to present honey in the most attractive and appetizing way. No section should be exhibited or allowed in an exhibit that shows travel stain, or other disfiguring marks, nor should any extracted honey be exhibited that is cloudy due to approaching crystallization or that exhibits pieces of cappings or other wax.

In the matter of hives the judge cautions the Association against exhibiting or allowing to be exhibited any hives or other appliances that have not been thoroughly overhauled, repainted or otherwise put into the best shape for the public gaze.

Due to particular instances of one or more of the above reasons some awards were withheld by the judge.

In closing I wish to advise that an apiculturist will be employed in 1917 to have charge of the College work in bee

culture and the execution of the provisions of the act of the last General Assembly, for the promotion and encouragement of the keeping of bees. I am sure that he will be able to assist in putting Maryland beekeeping on a footing consistent with her great possibilities.

ANNOUNCEMENT OF AWARDS.

HONEY PREMIUMS.

1.—Best display of comb honey, not under 48 sections, quality, appearance and arrangement to be scored.
1st—D. F. Oland, Onley, Md.
2nd—Myers Brothers, Brookville.

2.—Best 10 sections based on quality score, one to be cut.
1st—Myers Brothers, Brookville, Md.
2nd—D. F. Oland, Onley, Md.

3.—Best 5 sections based on quality score, one to be cut.
1st—Myers Brothers, Brookville, Md.
2nd—D. F. Oland, Onley, Md.

4.—Best display of extracted honey, not under 48 pounds, glass containers; quality, appearance and arrangement to be scored.
1st—T. F. C. Gunther, Baltimore, Md.
2nd—Thomas S. Biddle, Chestertown, Md.

5.—Best 10 pounds light extracted honey in glass containers, based on quality score.
1st—No award.
2nd—F. D. Covell, Frederick, Md.

6.—Best 10 pounds dark extracted honey in glass containers, based on quality score.
1st—H. E. Niles, Walbrook, Md.
2nd—T. C. Lytle, Baltimore, Md.

7.—Best display of beeswax, not less than 5 pounds.
1st—T. F. C. Gunther, Baltimore, Md.
2nd—F. D. Covell, Frederick, Md.

8.—Best display of bees in hives in which they have passed the summer, purity of race or variety, weight of hives, extent of display (not over 15 hives allowed) and arrangement to count.
1st—J. R. Abercrombie, Baltimore, Md.
2nd—H. E. Waggoner, Owings Mills, Md.

9.—Best full colony in 8 or 10-frame hive.
1st—J. R. Abercrombie, Baltimore, Md.
2nd—H. E. Waggoner, Owings Mills, Md.

10.—Best exhibit golden Italian bees, with queen in single comb observatory.
1st—No award.
2nd—No award.

11.—Best exhibit three-brand Italian bees and queen in single comb observatory hives.
1st—No award.
2nd—J. R. Abercrombie, Baltimore, Md.

12.—Best exhibit any other race or races of bees in single comb observatory hives, with queen.
1st—No award.
2nd—H. E. Niles, Walbrook, Md.

13.—Best display or home-made labor-saving devices for use in apiculture.
1st—J. R. Abercrombie, Baltimore, Md.
2nd—H. E. Waggoner, Owings Mills, Md.

14.—Most useful home-made apiary tool.
1st—H. E. Waggoner, Owings Mills, Md.
2nd—J. R. Abercrombie, Baltimore, Md.

I herewith present my annual financial report and ask that an auditing committee be appointed.

FINANCIAL REPORT OF TREASURER, MARYLAND STATE BEEKEEPERS' ASSOCIATION.

1915.		
Oct. 2—By balance		$9.92
Oct. 2—Deposit		1.00
Nov. 12—Deposit		11.00
Dec. 20—Deposit		103.00
Dec. 21—Myers Bros., premium, 1915	$10.00	
Dec. 21—D. F. Olin, premium, 1915	15.00	
Dec. 21—C. F. Baile, premium, 1915	3.00	
Dec. 21—T. F. C. Gunther	20.00	
Dec. 21—DeVries Herring	3.00	
Dec. 21—F. D. Correll	3.00	
Dec. 21—J. R. Abercrombie, premium, 1914-15	25.00	
Dec. 21—Harry E. Niles	8.00	
Dec. 21—W. E. Atkinson, premium, 1914	9.00	
Dec. 21—S. G. Croker, Jr., premium, 1914-15 (less fee for selling space, 1914-15)	24.00	
1916.		
Sept. 26—Deposit		1.00
Oct. 4—Deposit		5.00
Oct. 24—Deposit		13.00
Oct. 17—Stamps	3.00	
Nov. 11—Deposit		9.00
	$123.00	$152.92
By balance	29.92	
	$152.92	$152.92

Accounts of Treasurer E. N. Cory audited and found correct.

(Signed) JOHN R. ABERCROMBIE,
THOMAS G. LYTLE,
Auditing Committee.

November 18, 1916.

CHAIRMAN E. N. CORY: Every one interested in agriculture, I believe, is interested in the farm loan banks. I have had presented to me by Mr. Shamberger, Secretary to the Committee of Maryland men who are seeking to have one of the banks placed in this city, a letter setting forth that he would like to have us consider some resolutions. The suggestions which he has presented, I can read to you as they will not take very long. It seems to me that this is a very

important matter to the State, and, if the State Beekeepers can do anything in furtherance of this, it would be well for us to pass the resolution.

(The resolution was read and discussed. As it appears in the proceedings of the Agricultural Society, it will not be inserted here.)

Now if there is some member willing to make this as a motion before the Association, we can consider it in due order. Are you gentlemen interested in the farm loan bank? It seems to me that it would be wise for us to help the cause if we can.

DR. J. R. ABERCROMBIE: I move that the Beekeepers' Association approve the resolutions.

A MEMBER: Second the motion.

CHAIRMAN E. N. CORY: Any discussion?

The motion was adopted.

CHAIRMAN E. N. CORY: There is the matter of the election of officers for the ensuing year. It has been customary to have a nominating committee, but it seems to me that it is not necessary today and that we can have our nominations from the floor. Nominations are now in order for our President. Do I hear any nominations for President?

DR. J. R. ABERCROMBIE: I nominate Mr. James.

MR. N. W. JAMES: I decline. My hearing is not as good as other people's and when it comes to presiding at a meeting a man should be able to hear a little better than I can.

DR. J. R. ABERCROMBIE: I don't think that is a sufficient excuse.

CHAIRMAN E. N. CORY: Is there a second to Mr. James' nomination?

A MEMBER: Second the motion.

CHAIRMAN E. N. CORY: Mr. James, I think your hearing is sufficiently acute so that you can attend to the business of the Association. Any other nominations? All those in favor of Mr. James for President will signify by saying "aye." Opposed, "no." The ayes have it. Mr. James you are elected President.

The next position now, is Vice-President.

DR. J. R. ABERCROMBIE: I move Mr. Gunther.

A MEMBER: Second the nomination.

CHAIRMAN E. N. CORY: Any other nominations?

A MEMBER: I move the nominations be closed.

(A vote was taken and the chair declared Mr. Gunther duly elected.)

CHAIRMAN E. N. CORY: Secretary-Treasurer.

A MEMBER: I nominate Mr. Cory.

DR. J. R. ABERCROMBIE: Second the motion.

CHAIRMAN E. N. CORY: In this connection, I would like to have the consent of the Association to place the man whom we select as Apiculturist of the College as Secretary. We hope to have one by March, and it is very necessary that I be relieved of these duties. I have my hands full now with the work at the College and the Station. I think possibly the new man coming in and giving his entire time to apiculture will be able to build up the Association to its maximum efficiency. Last year I took the Secretaryship very unwillingly from Prof. Symons. He had his hands full with other things, and I told him I would try to help out, but haven't been able to do very much, so if I am elected I would like to have included that privilege of naming as a successor the man who takes charge of apiculture in the State for the State College. Is that satisfactory to you?

A MEMBER: Yes, sir.

CHAIRMAN E. N. CORY: That is the only way in which I can take it.

(Mr. E. N. Cory was elected Secretary-Treasurer with the privilege above mentioned.)

CHAIRMAN E. N. CORY: There is a delegate to the Agricultural Society to be elected. Do I hear nominations?

A MEMBER: Where is it to meet?

CHAIRMAN E. N. CORY: For the Council of the Agricultural Society. Dr. Abercrombie, I think, attended all the meetings of the Executive Council last year. The President and Secretary of this association are delegates to the Council of the Agricultural Society, and we nominate and elect a third delegate to serve on the Council. Now the Agricultural Society should be a great power, in the development of the agriculture of Maryland, and it seems to me highly im-

portant that the Beekeepers' Association exert every effort to maintain their part in the association. The first requisite is to have fifty members, and we must keep up to the membership number. And if we do keep up, then we will have our chance in directing the destinies of the agriculture of Maryland. Mr. Shoemaker, who declined re-election the other night said that he wanted to build up the Agricultural Society, that it was a check upon the State Board of Agriculture, and that if the State Board of Agriculture needed correction, that correction should come, first, from the Agricultural Society, and as they should be familiar with the needs of the State.

A MEMBER: I nominate Dr. Abercrombie.

A MEMBER: Second the motion.

CHAIRMAN E. N. CORY: Any other nominations?

(A vote was taken and Dr. J. R. Abercrombie declared elected.)

CHAIRMAN E. N. CORY: You may not all be familiar with the provisions of the new legislation in regard to the beekeeping industry, and I therefore ask your permission to read the new law.

A BILL ENTITLED

AN ACT providing for the encouragement of the keeping of honey bees by the suppression of bee diseases, through inspection and the acquisition and dissemination of knowledge of bees, under the direction of the State Board of Agriculture, by adding nine new sections to Article 48, of the Annotated Code of Maryland, to follow Section 74, of said Article, and to be known as Sections 74a, 74b, 74c, 74d, 74e, 74f, 74g, 74h and 74i.

SECTION 1. *Be it enacted by the General Assembly of Maryland,* That there are hereby added to Article 48 of the Annotated Code of Maryland nine new sections to follow after Section 74, of said Article and to be known as Sections 74a, 74b, 74c, 74d, 74e, 74f, 74g, 74h and 74i; said new sections to read as follows:

74a. That the State Board of Agriculture, through its duly authorized officer or agent, shall conduct such inspection of apiaries, and such investigations and disseminate such information as to it may seem best to promote the bee-keeping industry of Maryland.

74b. No person shall keep a colony of bees affected with the disease known as foul brood, black brood or any other infectious or contagious disease harmful to honey bees in the egg, larval, pupal or adult state, except as provided by Section III of this Act; and every beekeeper, when he becomes aware of the existence of such a disease among his bees, shall at once notify the State Board of Agriculture, or its duly authorized officer or agent of the existence of the same. Any person who knowing that a contagious or infectious disease exists among his bees, sells, barters

or gives away, or in any other way disposes of the same, in whole or in part, or any product of the same, or any hive, super, frame, section or other appliance used about the diseased bees, in such manner as to cause the spread of the disease, shall, upon conviction before a court or justice of the peace, be liable to penalties named in Section VII, of this Act.

74c. The State Board of Agriculture, through its duly authorized officer or agent, shall, upon the discovery of foul brood, black brood or other infectious or contagious diseases, send to the owner of the diseased bees an order in writing that such bees shall be held in quarantine until such time as the same are released by a written permit from said officer or agent, and bees so placed in quarantine shall not be removed from the premises of the owner under the penalties named in Section VII, of this Act.

74d. Upon the discovery of a case of foul brood, black brood or other infectious or contagious disease in any apiary or colony, the State Board of Agriculture, through its duly authorized officer or agent, shall give such instructions to the owner or caretaker thereof, as to the treatment of the diseased colonies, as may be necessary. If, upon subsequent inspection, the disease is still found to exist in the apiary or colony, the said officer or agent may cause the diseased colonies to be destroyed in such manner as to prevent the spread of the disease.

74e. No colony of bees shall be shipped or transported into the State for delivery to any consignee residing within the State, from any State or foreign country having an inspector of apiaries or other officer charged with the duties commonly performed by an inspector of apiaries, unless said colony be accompanied by a certificate in writing from such officer, stating that he has inspected said colony, and that it is free from infectious or contagious diseases. Whenever a colony of bees shall be shipped or transported into the State from any State or foreign country not having an inspector of apiaries or other officer charged with the duties commonly performed by an inspector of apiaries, the consignee shall, upon receipt of said colony, forthwith notify the officer or agent of the Board of its receipt, and the officer or agent shall forthwith inspect the same. No transportation company or common carrier shall accept for transportation into the State or shall deliver any colony of bees from a State or foreign country having an inspector of apiaries, or other officer charged with the duties commonly performed by an inspector of apiaries, to any consignee residing within the State, unless such colony is accompanied by a certificate of inspection, as heretofore provided. No common carrier shall be liable for damages to the consignee or consignor for refusing to receive, transport or deliver such a colony when not accompanied by a certificate of inspection, as above provided. Nothing in this Section shall be construed to prevent the transportation or delivery of queen bees when not accompanied by brood or comb.

74f. For the purpose of enforcing this Act, the State Board of Agriculture, through its duly authorized officer or agent, shall have access, ingress and egress to and from all places where bees, bee products or supplies or appliances used in apiaries are kept. The State Board of Agriculture may issue such rules and regulations as may be necessary for carrying out the purposes of this Act, and such rules and regulations shall have the force of law.

74g. Any person convicted of the violation of any provision of this Act, shall be subject to a fine not exceeding ten dollars ($10) for the first offense, to a fine not exceeding twenty-five

dollars ($25) for the second offense, and to a fine not exceeding fifty dollars ($50) for any subsequent offense.

74h. The State Board of Agriculture shall keep records of all work performed in carrying out the provisions of this Act, and shall report same as is required for its other activities.

74 i. The State Board of Agriculture shall fix the compensation of its duly authorized officer or agent and control the expenses thereof, and provide for the expenses incurred in carrying out the provisions of this Act, from any monies appropriated by the State to said Board.

SEC. II. *And be it further enacted,* That this Act shall take effect from the first day of June, 1916.

There being no further business the meeting was declared adjourned.

MARYLAND STATE HORTICULTURAL SOCIETY
LIST OF EXHIBITORS AND AWARDS
DEPARTMENT OF FRUITS AND NUTS.

W. R. BALLARD, *Supt.*

To the student of pomology the exhibit of varieties in the plate display is of perennial interest. Aside from the beauty of fruit which has been well selected for uniformity, size, color and freedom from blemishes, the variations within the individual variety when grown under the wide diversity of conditions prevailing in the State repays careful study. Each variety seems peculiarly adapted to certain climatic conditions, as for example, the Winesap group, which requires a higher mean temperature for their best development than do such varieties as Northern Spy and Baldwin. For this reason the splendid display of Stayman Winesap indicates that the growers of Maryland have been wise in planting largely of this variety. Ben Davis from the mountain sections of Garrett County as a rule appear to run small in size and poor in color, while varieties which are grown extensively in New York and other Northern sections reach a much higher development in this county than do these same varieties on the lower levels of the State.

The display of pears has not kept pace with that of the apples, and it seems apparent that the serious attacks of blight in recent years has proved discouraging to many of the growers.

The interest in nuts is growing and this is a field worthy of more attention by members of the Society. A number of trees of hardy pecans and Persian walnuts have been planted in recent years and the exhibit may be expected to develop as these trees come into bearing. Two or three promising selections of the native black walnut were on exhibit. The wide variation in this nut makes the selection of desirable types a fertile field for some enthusiastic member.

The exhibit as a whole was well up to the standard of previous years and speaks well for the continued interest of the members.

Adams, J. H., Ellicott City—APPLES: (Plate) Delicious.
Araonhalt, J., Bayard, W. Va.—APPLES: (Plate) Golden Russet, Ohio Nonpareil (Plate).

Bachrach, Davis, Baltimore—NUTS: Collection Persian or English Walnuts.

Baker, Mrs. Mary R., Brookeville—QUINCES: (Plate).

Balderston, C. C., Colora—APPLES: (Plate) Paragon.

Bartell, J. E., Govanstown—NUTS: (Plate) Black Walnuts.

Bennington, Henry, Pylesville—APPLES: (Plate) York.

Bikle, C. I., Smithsburg — APPLES: (Plates) Baldwin, Kinnard, Rome, Ben Davis, Fallawater, Maiden Blush, Rambo, Roxbury Russet, Stark, Tompkins King, Twenty Ounce, Winesap, Yellow Bellflower, Yellow Newton, York, York Stripe, Bullock, Gano, Rhode Island, Tolman, General Grant Crab Apple. QUINCES: (Plate).

Bishoff, T. E., Hoyes—APPLES: (Plates) Baldwin, Fallawater, Stark, York, Gano, Northern Spy.

Bixler, Howard A., Westminster—APPLES: (Plates) Domine, Grimes Golden, Jonathan, Rambo, Rome, Stayman Winesap, Stark, Smokehouse. PEARS: (Plate) Kieffer.

Boyd, Jack, Ednor—APPLES: (Plate) Stayman Winesap.

Brown, W. McCulloh, Oakland—APPLES: (Plates) Duchess, Wealthy, Northern Spy.

Bush, Louis, Oakland—APPLES: (Plate) Northwestern Greening.

Carroll Orchards, Westminster—APPLES: (Plates) Baldwin, Domine, Fallawater, Yellow Newton, Pewaukee, Smokehouse, Winter Banana, two unknown varieties.

Chevorant, J. B., Oakland—APPLES: (Plates) Duchess, Maiden Blush, Wealthy, Chenangs, Pewaukee, Rhode Island.

Cohill, L. A., Hancock—APPLES: (Plate) Grimes Golden, Jonathan York (Box), any variety.

Cohill, J. A., Hancock—APPLES: (Plates) G. Golden, Jonathan, Winesap, York, barrels; Winesap, York, Grimes Golden, Jonathan, any variety; boxes, any variety, Jonathan, Grimes Golden, Winesap. GENERAL EXHIBIT: 10 boxes (5 var.).

Dennis, E. R., Ellicott City—APPLES: (Plate) Lady.

Detrow, Samuel, Hagerstown—APPLES: (Plate) Paragon (box), any variety. PEACHES: (Plate).

Devries, George W., Sykesville—APPLES: (Plate) York.

Downey, Mrs. F. J., Sandy Spring—NUTS: Collection of wild nuts 8 kinds).

Eckstein, Mrs. M. E., Baltimore—NUTS: Collection of Persian or English Walnuts.

Ellithorpe, C. E., Bettinger—APPLES: (Plate) Ralls.

Clark, Enoch S., Federalsburg—APPLES: (Plate) Paragon.

Field, J. F., Hancock—APPLES: (Barrel) Paragon.

Funk, Kiefer, Chewsville—APPLES: (Plates) Grimes Golden, Paragon, York.

Garrett, P. J., Deer Park—APPLES: (Plate) Minatanka.

Geltmacher, John, Rohrersville—APPLES: (Plates) Baldwin, Lawver, Paragon, Stayman Winesap, York.

Gilardi, Lawrence, Boonsboro—APPLES: (Plates) Baldwin, Ben Davis, Domine, Grimes Golden, Jonathan, Lawver, Nero, Paragon, Rambo, Rome, Stayman Winesap, Stark, Yellow Newton, York, Hoover, Hyslop, Gano, Ingram, Northern Spy, Northwestern Greening, Smokehouse, York Stripe, Winter Paradise, Maiden Blush, Sweet Rambo; boxes, any variety, Jonathan, Grimes Golden, Rome, Paragon, Northwestern Greening; barrels, any variety, Winesap, York, Ben Davis, Paragon, Northwestern Greening. GENERAL EXHIBIT: 10 barrels (three varieties). General display, 45 sq. ft. Retail market Container. PEARS: (Plates) Anjou, Duchess, Kieffer.

Coddington, Asa., Oakland—APPLES: (Plate) Maiden Blush.

Griser, Jason, Smithsburg—APPLES: (Plate) Ben Davis.

Hanson, Leroy, Ellicott City—APPLES: (Plates) Any variety, three by Boy Club Exhibitor.

Hanson, Raymond, Ellicott City—APPLES: (Plate) Any variety, three by Boy Club Exhibitor.

Hanson Bros., Ellicott City—APPLES: Plates: Baldwin, Ben Davis, Delicious, Domine, Fallawater, Gravenstein, Grimes Golden, Jonathan, Maiden Blush, Paragon, Ralls, Rome, Smith Cider, Stayman Winesap, Stark, Summer Rambo, Tompkins King, Transparent, Wealthy, Winesap, York, Arkansas Black, Bailey, Early Harvest, Early Pennock, Early Ripe, Early Strawberry, Ewalt, Fame, Green Seeknofurther, Holland Winter, Hyslop, Jefferis, Kellow Sweet, Loudon, Moseley Best, Northern Spy, Rhode Island, Smokehouse, Sutton Beauty, York Stripe, Gano; boxes: Any variety, Jonathan, Grimes Golden, Rome, Stayman, Winesap, Paragon, Smokehouse, Moseley Best, Northern Spy; barrels: Jonathan, Grimes Golden, Stayman Winesap, Ben Davis, Retail Market Container. GENERAL EXHIBIT: 25 boxes (5 var.); 10 boxes (5 var.) Display, 45 sq. ft.; 12 plates (any standard variety). PEARS: (Box) Seckel; (plate) Seckel.

Harris, W. B., Worton, Md.—APPLES: (Plate) Ben Davis, Fallawater, Lawver, Paragon, Rome, Stayman Winesap, Stark, Winesap, York, Lankford; (barrel) York.

Harrisons Nurseries, Berlin, Md.—APPLES: (Plates) Ben Davis, Delicious, Fallawater, Grimes Golden, King David, Nero, Paragon, Stayman Winesap, Stark, Transparent, York, Gano, Northwestern Greening.

Hollinger, Catherine, Clearspring—APPLES: (Plate) Rome.

Kahl, Walter, Oakland—APPLES: (Plates) Wolf River, Green Pippin, Sweet Russet.

Kelly, Miss D. E., Preston—NUTS: Collection of wild nuts (8 kinds). GENERAL EXHIBIT: Pears.

Kelly, J. S., Preston—NUTS: Exhibit, chestnuts (4 kinds); collection Filberts. PEARS: (Plates) Garber, Bartlett, Seckel, Sheldon, Japan Golden Russet, Kieffer, Lawrence, LeConte.

Killins, A. W., Oakland—APPLES: (Plate) Black Gilliflower.

Lewis, Mrs. Lawrence, Govanstown—NUTS: Collection of Peanuts. GENERAL EXHIBIT: Pears.

Mann, Howard, Ellicott City—APPLES: (Plates) Baldwin, Ben Davis, Fall Pippin, Grimes Golden, Paragon, Rome, Stayman Winesap, Summer Rambo, Transparent, Winesap, Yellow Bellflower, Yellow Newton, York, Fameuse, Red Astrachan. PEARS: (Plate) Kieffer.

Martz, J. G.—APPLES: (Plate) York.

Miller, Hurly, Oakland—APPLES: (Plates) Grimes Golden, Maiden Blush, Tompkins King, Wealthy, Gano, Oliver, Northern Spy.

Miller, Robert H., Sandy Spring—APPLES: (Plate) York.

Miller, George H., Glen Arm—APPLES: (Plate) York. PEARS: Kieffer.

Moore, Willard, Jarboesville—PEARS: (Plate) Kieffer.

Morgan & Haines, Carlos—APPLES: (Pears) Baldwin, Ben Davis, Stark, Summer Rambo, Wolf River, York.

Myers, Clarence B., Westminster—APPLES: (Plate) three, any variety, by Boy Club Exhibitor.

Myers, J. M., Westminster—APPLES: (Plate) Ben Davis, Domine, Grimes Golden, Jonathan, Paragon, Rambo, Rome, Stayman Winesap, Stark, Wolf River, York, Smokehouse, Winter Banana.

Patterson, Calvin, College Park—NUTS: Collection wild nuts (8 kinds).

Perry, Prather, Clearspring—APPLES: (Plate) Ben Davis.

Rickard, Tom, Hagerstown—APPLES: (Plate) Lady.

Ridder, Mac P., Oakland—APPLES: (Plate) Kinnard.

Ridder, D. H., Oakland—APPLES: (Plates) Baldwin, Ben Davis, Jonathan, Rambo, Stark, Tompkins King, Winter Paradise, York, Bismarck, Jersey Sweet, Deacon Jones, Mother, Northern Spy, Rhode Island, Smokehouse, Wagner, Winter Banana, Richard Sweet, Stayman.

Rowlands, Isaac, Clearspring—APPLES: (Plate) Delicious.

Rowlands, Lewis, Clearspring—APPLES: (Plate) Delicious, Gano.

Rowlands, Richard, Clearspring—APPLES: (Plate) Paragon.

Sanger Bros., Cordova — APPLES: (Plates) Ben Davis, Nero, Paragon, Smith Cider, Stayman Winesap.

Scott, Bert C., Ottoway — APPLES: (Plates) Alexander, Ben Davis, Wolf River, Northern Spy, Rhode Island, Titus.

Scott, John, Hutton — APPLES: (Plate) Northern Spy, Titus, Pippin.

Seth, Joseph B., Easton—APPLES: (Plate) Delicious.

Smith, Chas. L., Clearspring — APPLES: (Plates) Fallawater, Tompkins King, Transparent, Winter Paradise, Northern Spy, Northwestern Greening, Sweet Bough.

Smith, Thomas L., Oldtown—APPLES: (Plate) Transparent.

Smouse, Mortimer, Grantsville—APPLES: (Plate) Wolf River.

Snader, A. P., New Windsor—APPLES: (Barrel) Rome.

Snowden, Miss Anna, Ashton—APPLES: (Plates) Paragon, Stayman Winesap, Yellow Newton. Boxes: Any variety, Stayman Winesap. Barrel: Stayman Winesap.

Snyder, E. B., Hagerstown—APPLES: (Plates) Domine, Hubbardston, Jonathan, Rambo, Rome, Smith Cider, York.

Sollers, C. E., Oakland—APPLES: (Plate) Sweet Russet.

Stuhmer, Henry, Baltimore, NUTS: Collection wild nuts (8 kinds), collection English Walnuts.

Thomas, Dr. Francis, Ednor, Md.—APPLES: (Plates) Paragon, Stayman Winesap, Yellow Bellflower, Yellow Newton. Boxes: Any variety, Grimes Golden, Stayman Winesap. Barrels: Any variety, Stayman Winesap. GENERAL EXHIBIT: 25 boxes (5 var.); 10 boxes (5 var.); 10 barrels (3 var.). Display 45 sq. ft., 12 plates standard variety.

Thomas, E. P., Ednor, Md.—APPLES: (Plates) Ben Davis, Fallawater, Kinnard, Paragon, Stayman Winesap, Transparent, Early Edwards, Matamuskeet. GENERAL EXHIBIT: 25 boxes (5 var.); 10 boxes (5 var.); 10 barrels (3 var.). Display 45 sq. ft., 12 plates any standard variety. Retail shipping container. Boxes: Any variety, Grimes Golden, Rome, Stayman Winesap, Paragon, Matamuskeet. Barrels: Any variety, York, Ben Davis.

Towson, A. L., Smithsburg—APPLES: (Plate) Hubbardston.

Ward, Mellor K., Jarrettsville—APPLES: (Plate) York.

Warrior Mt. Orchard, Old Town—APPLES: (Plates) Paragon, York. Boxes: Any variety, Paragon.

Weber & Sons, Oakland—APPLES: (Plate) Northern Spy.

Weitzell, G. W., Oakland—APPLES: (Plate) Grimes Golden.

Whiteford Bros., Whiteford—APPLES: (Plates) Delicious, Jonathan, Paragon, Stayman Winesap, King David. Boxes: Delicious. Barrels: Any variety, Winesap, Jonathan. GENERAL EXHIBIT: 10 boxes (5 var.); 10 barrels (3 var.).

Whiteford, H. C., Annapolis—APPLES: (Plate) Delicious.

Wolford, Marshall, Flintstone—APPLES: (Plates) Roxbury Russet, Stark, Opalescent, Titus.

DEPARTMENT OF CUT FLOWERS AND FOLIAGE PLANTS.

This department, under the direction of Chairman George Morrison and his very efficient committee, arranged a magnificent floral display, every feature of which was a gratifying result of their arduous labors.

Anderson, Andrew, Govans—ROSES: Ophelia (25); My Maryland (25); Radiance (25); Red (25).

Bauer, Fred C., Govans—Window box for outdoor use. EVERGREENS Tub; 25 Conifers; PALMS: Pair Kentia; Specimen; Ferns: Specimen.

Black Bros., Baltimore — CHRYSANTHEMUMS: Collection of Pompom sprays.

Cook, John, Baltimore — ROSES: Ophelia (25); My Maryland (25); Radiance (25); Red (25); SEEDLING.

Crescent Florists, Baltimore—CUT FLOWERS: Funeral Design.

Ekas, Harry, Baltimore—CHRYSANTHEMUMS: William Turner (12); Yellow (12); Any Color (12). SNAPDRAGON: Yellow (12).

Erdman & Ulrich, Baltimore — CHRYSANTHEMUMS: White (18); Yellow Chadwick (12); White Chadwick (12); Yellow (12); DECORATIVE AND FLOWERING PLANTS: Group Chrysanthemums. BEGONIAS: Flowering (12).

Glass, James, Baltimore—SNAPDRAGONS: Yellow (12); Pink (12). SWEET PEAS: Pink (100).

Hamilton, James, Mt. Washington—CARNATIONS: Enchantress shade (25); Carnations, best (25); White (25); One variety (25); Mrs. C. W. Ward (25); Calendula (25). CUT FLOWERS: Funeral design of Chrysanthemums.

Hannigan, M. J., Sudbrook Park—CHRYSANTHEMUMS: Yellow Chadwick (12); White Chadwick (12); E. A. Seidewitz (12); ROSES: White Killarney (25); Ophelia (25); Radiance (25); Red (25).

Hess, Conrad, Baltimore—CARNATIONS: White (25); Mrs. C. W. Ward (25).

Holliday Bros., Baltimore—CUT FLOWERS: Funeral design of Chrysanthemums; Artistic Basket of Flowers; Hospital Basket; Table Decoration; Bride's Bouquet.

Johnston, Mrs. Mary, Baltimore — CUT FLOWERS: Hospital Basket; Funeral Design; Bride's Bouquet; Artistic Basket. DESIGN: Chrysanthemums.

Kennedy, Wm. J., Pikesville, Md.—CARNATIONS: Enchantress (25); White (25); Mrs. C. W. Ward (25).

Lehr Bros., Brooklyn—ROSES: Ophelia (25); My Maryland (25); White Killarney (25); Cecil Brunner type (25); Pink (25); Red (25); Radiance (25).

Lohr & Fritze, Baltimore—ROSES: White Killarney (25); Ophelia (25); My Maryland (25); Red (25).

Lotze, G. A., Glenburnie—CHRYSANTHEMUMS: Yellow (18); Pink (18); E. A. Seidewitz (12); Wm. Turner (12); White (12); Yellow (12); Pink (12). Best Vase of CARNATIONS: Enchantress (25); Dark Pink (25); Red (25); White (25); Mrs. C. W. Ward (25).

McCormick, John, Baltimore—ROSES: Radiance (25); Red (25).

Morrison, George, Carroll P. O.—FOLIAGE PLANTS: Exhibit flowering and decorative plants, 150 sq. ft., six varieties (12). CHRYSANTHEMUMS: Single stem (12). Cut blooms, any color (18); White (12); Yellow (12); Pink (12); any color (12). ROSES: American Beauties (18). VIOLETS: 100 blooms.

Moss, Isaac H., Govans — FOLIAGE PLANTS: Pair Pedestal Boxes; Window Box for outdoor use. EVERGREENS Tub: Conifers (25); Collection (15). BEGONIAS: Lorraine type (12). POINSETTIA: Plant. CHRYSANTHEMUMS: White (18); Yellow (18); Yellow Chadwick (12); White Chadwick (12); E. A. Seidewitz (12); Yellow (12). ROSES: Radiance (25); Red (25); Ophelia (25). CARNATIONS: Red (25); White (25); C. W. Ward (25); Enchantress Shade (25).

Pierson, Inc., A. N., Cromwell, Conn.—CHRYSANTHEMUMS: (Pompom) Romaine Warren; Hilda Canning; Delphine Dodge; Barbara Davis; Bronze Single Stem.

Penn & Sons, John W., Fullerton—CARNATIONS: Enchantress (25); White (25); Mrs. C. W. Ward (25).

Quick, Harry J., Baltimore—CHRYSANTHEMUMS: Collection of Pompoms; display of Pompoms. CUT FLOWERS: Bride's Bouquet; Funeral Design of Chrysanthemums.

Richmond, A. S., Baltimore—CHRYSANTHEMUMS: Yellow (18).

Richmond, Mack, Woodbrook—Exhibit Decorative Plants, 150 sq. ft. CHRYSANTHEMUMS: Exhibit Pink (12); White (12); Yellow (12); Group Crotons, 100 sq. ft. BEGONIAS: Lorraine type (12). POINSETTIA: Plant. FERNS: Nephrolepsis Ferns (12); Specimen Fern, Adiantum Ferns (12). CUT FLOWERS: Table decorations for round table.

Seidewitz, Edwin A., Baltimore—CUT FLOWERS: Funeral design of Chrysanthemums; Basket of Flowers; Hospital Basket. ORIGINAL DESIGN: Chrysanthemums.

Smith & Co., Chas. E., Baltimore—CHRYSANTHEMUMS: Yellow (12). CARNATIONS: Enchantress (25); Red (25); Dark (25); White (25); Mrs. C. W. Ward (25); Calendula (25). SWEET PEAS: Pink (100); White (100). SNAPDRAGONS: Pink (12); White (12); any other variety (12). CUT FLOWERS: Design of Chrysanthemums; Hospital Basket; Artistic Basket.

Smith, Elmer D., Adrian, Mich.—CHRYSANTHEMUMS: Pompom, "Little Gem."

Stevenson Bros., Towson—ROSES: Pink Killarney (25); White Killarney (25); Ophelia (25); Yellow (25); Red (25); Pink (25); Cecil Brunner (25). ROSES: Best Vase.

Vincent, Richard, Jr. & Sons Co., White Marsh—FERNS: Nephrolepsis. CHRYSANTHEMUMS: Display (Pompoms).

Wagner, John L., Towson—FOLIAGE PLANTS: Pair Pedestal Boxes. EVERGREENS: Conifers (25). BEGONIAS: Lorraine type (12). ROSES: Killarney, White (25); Yellow Roses (25); Radiance (25).

DEPARTMENT OF VEGETABLES.

E. F. STODDARD, *Supt.*

The 1916 vegetable exhibit exceeded in quality and size that of last year. The competition between the commercial exhibits was close, and the quality of the different kinds of vegetables in the collections, as well as their condition and

arrangement on the table, showed the careful preparation exercised by the exhibitors. The potato exhibit was the big feature among the vegetables, and the exhibit made by the Boys' Corn Clubs was very good.

Students at the Maryland State College made a small exhibit, but they will be prepared for a larger exhibit next year.

One grower exhibited sweet potatoes in a commercial package, and others expressed their desire to show more of this side of the vegetable work in future years. The growers of the State are taking a greater interest in "Maryland Week," and next year's show should exceed past exhibitions.

Akehurst, R. G., Sparks—POTATOES: Irish Cobbler (Peck).
Allardise, R. A., Hurlock—POTATOES: Irish Cobbler (Peck). SWEET POTATOES: Gold Skin (Peck).
Balderston, Miss Bertha, Colora—LETTUCE: Loose-leaf type (*6*).
Boswell, W. K., Waterbury—POTATOES: Gold Coin (Peck); White McCormick (Peck).
Bumsley, Kenneth, Rockville—POTATOES: Boy Club Exhibitor.
Burdette, J. P., Millersville—POTATOES: Irish Cobbler (Peck); any other variety (Peck).
Byrn, Wm., Cambridge—SQUASH: Hubbard (3).
Clarke, Enoch, Federalsburg—SWEET POTATOES: Big Stem (Peck).
Clark, Wm. H., Federalsburg—TURNIPS: (Peck).
Cluff, Francis, Pocomoke City—POTATOES: Boy Club Exhibitor.
Conaway, D. L., Oakland, R. F. D.—POTATOES: Irish Cobbler (Peck).
Cooksey, Reed, La Plata—POTATOES: Boy Club Exhibitor.
Cooksey, Roger, La Plata—POTATOES: Boy Club Exhibitor.
Cradock, Thos., Pikesville, Md.—POTATOES: (Peck); any variety.
Gettings, John, Woodlawn—CARROTS: (Peck). KALE: (Peck). PARSNIPS: (Peck). SPINACH: (Peck). TURNIPS: (Peck). SALSIFY: (Oyster Plant); (12 roots).
Gorsuch, T. T., Glencoe—POTATOES: Green Mountain (Peck).
Hanson Brothers, Ellicott City—IRISH POTATOES: (One peck each of at least 4 varieties); White McCormick (Peck). POTATOES: Any other variety (Peck). ONIONS: Yellow (Peck).
Herring, D., Sykesville—CABBAGE: Savoy type (3 heads).
Hirst, Fred, Cambridge—IRISH POTATOES: (One peck each of at least 4 varieties). BEETS: (Peck). PEPPERS: Bull Nose type (Peck). CABBAGE: Flat Dutch type (3 heads); Ballhead type (3 heads); Savoy type (3 heads). CAULIFLOWER: (3 heads). LETTUCE: Head type (6). SALSIFY: (12 roots). HORSE RADISH: (6 roots). PUMPKIN: Largest; any variety (3).
Hirst, J. Howard, Cambridge—VEGETABLES: For commercial use, at least 12 kinds, grown by commercial growers. POTATOES: Irish Cobbler (Peck). BEETS: (Peck). CARROTS: (Peck). PEPPERS: Bull Nose type (Peck). RUTABAGAS: (Peck). SPINACH: (Peck). TURNIPS: (Peck). CELERY: Golden Self-Blanching (6 stalks); Giant Pascal (6 stalks); any other variety (6 stalks). LETTUCE: Head type (6);

Loose-leaf type (6). SALSIFY: (12 roots). PUMPKINS: (3); any variety.

Hutchinson, C. J., Millersville—POTATOES: Any variety (Peck).

Imwold & Bros., Hillen Road—VEGETABLES: For commercial use, at least 12 kinds, grown by commercial growers. BEETS: (Peck). KALE: (Peck). CELERY: Golden Self-Blanching (6 stalks); Giant Pascal (6 stalks). SALSIFY: (12 roots). DRIED HERBS: (Display).

Janning, John H., Brookeville — POTATOES: Green Mountain (Peck).

Janney, Richard W., Brookeville—POTATOES: Boy Club Exhibitor.

Jones, J. W., Pearson—POTATOES: Green Mountain (Peck).

James, Lewis St., Federalsburg—SWEET POTATOES: Gold Skin (Peck); any other variety (Peck).

Kelly, J. S., Preston—SWEET POTATOES: Any variety (Peck).

Kendall, B. S., Clarkesville—PUMPKIN: Largest (1).

Kent, Edgar, Princess Anne—POTATOES: Irish Cobbler (Peck).

Kraft, Andrew, Woodlawn—CARROTS: (Peck). KALE: (Peck). SALSIFY: (12 roots); Vegetable Novelty (1).

Lake, Milton, Princess Anne—POTATOES: Boy Club Exhibitor.

Lewis, Mrs. Lawrence, Lake Avenue, Govans—VEGETABLE NOVELTY. DRIED HERBS: Best display.

Linthicum, W. R., La Plata — POTATOES: Greater Rehoboth (Peck).

McCloskey, E. G., Sparks—POTATOES: Greater Rehoboth (Peck).

Matthews, Frank, Pocomoke City — SWEET POTATOES: Any variety (Peck).

Mays, George, Jr., Sparks—POTATOES: Greater Rehoboth (Peck).

Miller, Geo. H., Perry Hall—POTATOES: Irish Cobbler (Peck). PARSNIPS: (Peck). TURNIPS: (Peck).

Miller, Gustav F., Easton—POTATOES: Green Mountain (Peck).

Morgan & Haines, Carlos—POTATOES: Irish Cobbler (Peck); Green Mountain (Peck).

Morrison, Geo., Uplands—Best display of VEGETABLES for table use, at least 12 kinds, grown by professional gardeners.

Myers, J. M., Westminster — CABBAGE: Flat Dutch type (3 heads). PUMPKINS: Any variety (3); large variety (1).

Neikirk, John E., Hagerstown, Md. — IRISH POTATOES: One peck each of at least 4 varieties. POTATOES: Any other variety (Peck).

Norris, Jack, Pomfret—POTATOES: Boy Club Exhibitor.

Nuttle, Elias W., Denton—POTATOES: Boy Club Exhibitor.

Osborne, Geo. M., Hurlock—IRISH POTATOES: One peck each of at least 4 varieties. SWEET POTATOES: One peck each of at least 2 varieties.

Powell, Col. Wm. S., Ellicott City—HORTICULTURAL SEEDS: Exhibit.

Price, C. W., Govanstown—POTATOES: Green Mountain (Peck).

Ridout, O., Jr., Annapolis—BEETS: (Peck). CARROTS: (Peck). TURNIPS: (Peck).

Roberts, R. T., Ellicott City—POTATOES: Irish Cobbler (Peck).

Schnabel, Chris., Eastview — ONIONS: White (Peck); Yellow (Peck).

Sloan, F. R., Lonaconing—POTATOES: Irish Cobbler (Peck); Green Mountain (Peck). CABBAGE: Flat Dutch type (3 heads). CAULIFLOWER: (3 heads).

Snowden, Francis, Ashton—POTATOES: McCormick (Peck).

Stagg, A. M., Snow Hill—POTATOES: Red McCormick (Peck).

Stewart Farms, Millersville—IRISH POTATOES: One peck each of at least 4 varieties. POTATOES: Gold Coin (Peck); any other variety (Peck).
Tarbert, A. J., Towson—TURNIPS: (Peck). CELERY: Golden Self-Blanching (6 stalks); Giant Pascal (6 stalks); any other variety (6 stalks). SALSIFY: (12 roots).
Tescher, Mrs. C. L., Winchester—POTATOES: Any variety (Peck). SWEET POTATOES: Any variety (Peck).
Thomas, E. P., Ashton—POTATOES: Irish Cobbler (Peck).
Thomas, S. P., Ashton—POTATOES: Any variety (Peck).
Frere, Bart, Tompkinsville—POTATOES: Boy Club Exhibitor.
Turner, M. J., Millersville—IRISH POTATOES: One peck each of at least 4 varieties—Gold Coin, Greater Rehoboth, Red McCormick; any other variety.
Twining, Harry, Princess Anne—POTATOES: Any variety (Peck).
Underhill, S. M., Cambridge—TURNIPS: (Peck).
Wathen, Albert, Charles Co.—POTATOES: Boy Club Exhibitor.
Werner, Andrew, Preston—POTATOES: Boy Club Exhibitor.
Wheelwright, J. H., Ellicott City—POTATOES: Irish Cobbler (Peck). CARROTS: (Peck). TURNIPS: (Peck). CABBAGE: Savoy type (3 heads). CELERY: Any variety (6 stalks).
Whitridge, Wm. H., Baltimore, Md.—IRISH POTATOES: One peck each of at least 4 varieties. POTATOES: Green Mountain (Peck); McCormick (Peck). BEETS: (Peck). CARROTS: (Peck). KALE: (Peck). ONIONS: Yellow (Peck). PARSNIPS: (Peck). CABBAGE: Savoy type (3 heads). CAULIFLOWER: (3 heads). CELERY: Any variety (6 stalks). LETTUCE: Head type (6); Loose-leaf type (6). SALSIFY: (12 roots). SPINACH: (Peck). TURNIPS: (Peck).
Wood, Winfred, Elvaton—POTATOES: Boy Club Exhibitor.
Zimmerman, Alfred G.—POTATOES: Irish Cobbler (Peck).

DEPARTMENT OF HOME CANNED AND PRESERVED PRODUCTS.

J. B. S. NORTON, *Supt.*

Thirty-two exhibitors took part in the display in this department. There was a much larger number of exhibitors than in any previous exhibit of this Society; and the quality is increasing from year to year. The restrictions in the rules tending toward greater uniformity and cutting down mere quantity at the expense of quality has borne good fruit. Perhaps, however, placing those who have won grand prizes in a class by themselves would be a good plan to give some encouragement to beginners and thus induce more to enter and work up to the excellence of those who have learned through a series of competitions to produce such a high grade of fruit and vegetable products as has pleased the visitors at our show in recent years.

Abbott, Mrs. F. L., Baltimore—CANNED FRUIT: Peaches, halved (Can). PRESERVES: Quinces (Pint); Grape (Pint); Tomatoes (Pint). JELLIES: Currant (Glass); Grape (Glass);

Raspberry (Glass). MISCELLANEOUS: Tomato Catsup (Bottle); Sweet Pickled Pears.

Brown, Mrs. F., Garrett Park—CANNED FRUIT: Pears (Can). CHERRIES: (Can).

Call, Mrs. L., Garrett Park—CANNED FRUIT: Peaches, halved (Can); Cherries (Can). CANNED VEGETABLES: Tomatoes (Can). PRESERVES: Strawberries (Pint). PICKLES: Mixed (Pint); Chili Sauce.

Clark, Mrs. Annie, Federalsburg—CANNED FRUIT: Pears (Can). CANNED VEGETABLES: Pumpkin (Can). PRESERVES: Cherries (Pint); Pears (Pint); Citron (Pint); Strawberries (Pint). BUTTERS AND JAMS: Apple Butter (Pint); Peach Butter (Pint); Pear Butter (Pint); Grape Butter (Pint). JELLIES: Apple (Glass); Blackberry (Glass); Crab Apple (Glass); Currant (Glass); Grape (Glass); Quince (Glass). MISCELLANEOUS: Tomato Catsup (Bottle).

Clark, Mrs. Sadie, Federalsburg—CANNED FRUIT: Cherries (Can). PRESERVES: Cherries (Pint); Citron (Pint). JELLIES: Apple (Glass); Grape (Glass). FRUIT JUICES: Grape Juice (Pint).

Crew, Miss Ida C., Chestertown—CANNED VEGETABLES: Best exhibit of Canned Vegetables (8 kinds); Asparagus (Can); String Beans (Can). PRESERVES: Strawberries (Pint); Gooseberries (Pint). JELLIES: Grape (Glass); Quince (Glass).

Downey, Mrs. F. J., Sandy Spring—CANNED FRUIT: Exhibit of Canned Fruits (8 kinds); Apple Sauce (Can); Peaches, halved (Can).

Evans, Mrs., Garrett Park—JELLIES: Apple (Glass).

Federalsburg Farmers' Club, Federalsburg — General Exhibit, Class 6.

Gettings, Miss Ella, Woodlawn-Forest Park—CANNED FRUIT: Exhibit 8 kinds; Apple Sauce (Can); Apples, sliced (Can); Pears (Can); Blackberries (Can); Peaches, halved (Can); Cherries (Can). Exhibit 10 Apple Products. CANNED VEGETABLES: Exhibit 8 kinds (Cans); Spinach (Can); Corn, cut (Can); Asparagus (Can); Pumpkin (Can); Lima Beans (Can); String Beans (Can); Tomatoes (Can). Ten-quart glass cans, any fruit or vegetable not included in list. PRESERVES: Exhibit 8 kinds, Cherries (Pint); Quinces (Pint); Pears (Pint); Plums (Pint); Citron (Pint); Strawberries (Pint); Blackberries (Pint); Tomatoes (Pint). BUTTER AND JAMS: Exhibit 5 kinds Fruit Butter, Apple Butter (Pint); Peach (Pint); Plum (Pint); Pear (Pint); Grape (Pint); Strawberry (Pint). Marmalades: Exhibit 5 kinds, Apple (Can); Quince (Can). JELLIES: Apple (Glass); Blackberry (Glass); Crab Apple (Glass); Currant (Glass); Grape (Glass); Quince (Glass). Collection 6 kinds dark fruit jellies. Collection 6 kinds light fruit jellies. FRUIT JUICES: Exhibit 5 kinds, Grape Juice (Pint); Apple Juice (Pint). Collection 5 kinds Grape Juices. PICKLES: Condiment Novelty; Pickled Beets (Pint). Exhibit Sour Pickles, 5 kinds. Exhibit Sweet or Spiced Pickles, 5 kinds; Mixed Pickle (Pint). MISCELLANEOUS: Exhibit (5 kinds) Relishes, Fruit Syrup (Bottle); Exhibit (5 kinds) Canned Soups, Tomato Catsup (Bottle); Exhibit Conserves, dried (5 kinds); Exhibit Dried Fruit (5 kinds), Dried Apples. Novelty in Class 6. Pickled Mangoes.

Gettings, Miss Elsie, Woodlawn—Collection of Canned Fruits, Vegetables, Preserves, Jellies and Pickles in Girls' Class.

Girls' Canning Club, Lothian—General Exhibit, Class 6.

Harris, Mrs. A. L., Betterton—CANNED FRUIT: Exhibit 8 kinds, Apple Sauce (Can); Pears (Can); Peaches, halved (Can). CANNED VEGETABLES: Exhibit 8 kinds, Spinach (Can); Corn, cut (Can); Asparagus (Can); Pumpkin (Can); Lima Beans (Can); String Beans (Can); Peas (Can); Tomato Soup (Can); Tomatoes (Can). Exhibit 10-quart glass cans any fruit or vegetable not in list. PRESERVES: Exhibit 8 kinds, Cherries (Pint); Quinces (Pint); Pears (Pint); Strawberries (Pint); Tomatoes. BUTTER AND JAMS: Apple Butter (Pint); Grape Butter (Pint); Strawberry Jam (Pint); Blackberry Jam (Pint). FRUIT JUICES: Exhibit 5 kinds, Grape Juice (Pint); Apple Juice (Pint). PICKLES: Mixed Pickles (Pint). MISCELLANEOUS: Exhibit Canned Soups (5 kinds). Tomato Catsup (Bottle). Best Novelty in Class 6. Marmalade: Apple (Can). JELLIES: (Glass), Apple, Blackberry, Crab Apple, Grape.

Hoenig, Mrs. Henry, Odenton—CANNED FRUIT: Apples, sliced (Can); Pears (Can); Peaches, halved (Can); Cherries (Can). CANNED VEGETABLES: Lima Beans (Can); String Beans (Can); Peas (Can); Tomatoes (Can). PRESERVES: Pears (Pint); Tomatoes (Pint). MISCELLANEOUS: Tomato Catsup (Bottle). Best Novelty in Class 6. Spiced Collection. JELLIES: Apple (Glass); Crab Apple (Glass); Grape (Glass); Lemon (Glass). PICKLES: Pickled Beets (Pint); Cucumber Pickle (Pint); Mixed Pickle (Pint); Chili Sauce, Pickled Onion.

Iglehart, Miss M. L., Lothian—CANNED FRUIT: Cherries (Can). CANNED VEGETABLES: Tomatoes (Can); Cymbling (Can).

Imwold, Mrs. C. F., Baltimore City—CANNED FRUIT: Exhibit 8 kinds, Apples, sliced (Can); Pears (Can); Blackberries (Can); Peaches, halved (Can); Cherries (Can). CANNED VEGETABLES: Exhibit 8 kinds, Spinach (Can); Corn, cut (Can); Asparagus (Can); Pumpkin (Can); Lima Beans (Can); Tomato Soup (Can); Tomatoes (Can). PRESERVES: Exhibit 8 kinds, Cherries (Pint); Quinces (Pint); Figs (Pint); Plums (Pint); Citron (Pint); Strawberries (Pint); Blackberries (Pint); Tomatoes (Pint). BUTTERS AND JAMS: Exhibit 5 kinds, Fruit Butter, Apple Butter (Pint); Peach Butter (Pint); Plum Butter (Pint); Grape Butter (Pint); Blackberry Jam (Pint). Marmalades: Exhibit 5 kinds. Quince Marmalade (Can). JELLIES: Blackberry (Glass); Crab Apple (Glass); Currant (Glass); Grape (Glass); Quince (Glass). Collection (6 kinds) dark fruit jellies. Collection (6 kinds) light fruit. FRUIT JUICES: Exhibit (5 kinds) Fruit Juices; Grape Juice (Pint); Apple Juice (Pint); Exhibit varieties Grape Juice. PICKLES: Condiment Novelty, Pickled Beets (Pint); Exhibit (5 kinds) Sour Pickles. MISCELLANEOUS: Apple Vinegar (Pint). Exhibit of Relishes. Fruit Syrup (Bottle); Exhibit Canned Soups (5 kinds). Exhibit Canned Foods ready to serve (8 kinds). Exhibit Conserves (dried); Dried Fruit (5 kinds), Dried Apples (one-half pound).

Kelley, Mrs., Garrett Park—CANNED VEGETABLES: Lima Beans (Can). JELLIES: Apple Jelly (Glass).

Laigneil, Miss Lelia, Federalsburg—Collection Preserves in Girls' Class.

Laigneil, Mrs. Edith, Federalsburg—CANNED FRUIT: Exhibit (8 kinds). CANNED VEGETABLES: Pumpkin (Can); String Beans (Can); Tomatoes (Can). PRESERVES: Cher-

ries (Pint); Citron (Pint). BUTTER: Peach Butter (Pint). JELLIES: Apple (Glass); Crab Apple (Glass); Grape (Glass); Quince (Glass). PICKLES: Exhibit Sweet or Spiced Pickles (5 kinds).

Lewis, Mrs. Lawrence, Govans—CANNED FRUIT: Exhibit (8 kinds): Apple Sauce (Can); Apples, sliced (Can); Pears Can); Peaches, halved (Can); 10 articles made from Apples. CANNED VEGETABLES: Exhibit (8 kinds): Spinach (Can); Corn, cut (Can); Asparagus (Can); Pumpkin (Can); String Beans (Can); Peas (Can); Tomato Soup (Can); Tomatoes (Can; Tomatoes, collection (5); Rhubard, cold water; exhibit 10-quart glass cans, any fruit or vegetable not included in list. PRESERVES: Exhibit (8 kinds), Quinces (Pint); Pears (Pint); Tomatoes (Pint). BUTTERS AND JAMS: Exhibit (5 kinds), Fruit Butter, Apple Butter (Pint); Grape Butter (Pint); Strawberry Jam (Pint); Blackberry Jam (Pint). MARMALADES: Exhibit (5 kinds), Apple Marmalade (Can); Quince (Can). JELLIES: Collection dark fruit jellies (6 kinds). FRUIT JUICES: Best exhibit (5 kinds), Grape Juice (Pint); Apple Juice (Pint); Collection, Grape Juice. PICKLES: Condiment Novelty, Pickled Beets (Pint); Exhibit (5 kinds), Sour Pickles; Exhibit, Sweet or Spiced Pickles (5 kinds); Cucumber Pickle (Pint); Mixed Pickle (Pint). MISCELLANEOUS: Exhibit (5 kinds), Relishes; Exhibit (5 kinds), Home-made Nut Butter; Fruit Syrup (Bottle); Canned Soups (5 kinds); Tomato Catsup (Bottle); Conserves, dried; Dried Fruit (5 kinds); Dried Apples (one-half pound). Novelty in Class 6.

McMillan, Mrs.,—CANNED FRUIT: Blackberries (Can); Cherries (Can); Pineapple (Can).

Pfingston, Miss Elsie, Waterbury—Collection of Canned Fruits, Vegetables and Jellies in Girls' Class.

Rucker, Miss, Garrett Park—CANNED VEGETABLES: Corn, cut (Can). PRESERVES: Raspberry. JELLIES: Grape (Glass).

St. James, Mrs. L., Federalsburg—CANNED FRUIT: Pears (Can); Blackberries (Can); Peaches, halved (Can); Cherries (Can). CANNED VEGETABLES: Exhibit (8 kinds). PRESERVES: Exhibit (8 kinds), Cherries (Pint); Tomatoes (Pint). BUTTERS AND JAMS: Peach Butter (Pint); Pear Butter (Pint); Quince Butter (Pint). JELLIES: Grape (Glass); Quince (Glass); Collection Dark Fruit Jellies (6 kinds); Collection Clear Light Fruit Jellies (6 kinds); Plum (Glass); Strawberry (Glass). MISCELLANEOUS: Apple Vinegar (Pint); Canned Prunes.

St. James, Miss Florence, Federalsburg—Collection of Canned Fruits, Vegetables, Preserves, Jellies and Pickles in Girls' Class.

St. James, Lillian, 8 years old, Federalsburg—CRABAPPLE JELLY.

Shirk, John H., Taneytown—CANNED FRUITS: Exhibit (8 kinds), Huckleberries, Apple Sauce (Can); Apples, sliced (Can); Pears (Can); Pineapple (Can); Canned Plums; Canned Prunes; Blackberries (Can); Peaches, halved (Can); Cherries (Can). CANNED VEGETABLES: Exhibit (8 kinds), String Beans (Can). PICKLES: Exhibit (5 kinds), Sour Pickles. MISCELLANEOUS: Canned Ham, Canned Tongue.

Springer, Mrs. H. P., Garrett Park—CANNED FRUIT: Peaches, halved (Can); Cherries (Can). CANNED VEGETABLES: Corn, cut (Can); Lima Beans (Can); Tomato Soup (Soup); Beets (Can). PICKLES: Chili Sauce.

Still Pond Grange, Still Pond—General Exhibit, Class 6.

Wahaus, Miss May, Woodlawn—Collection Canned Fruits, Vegetables, Preserves, Jellies and Pickles in Girls' Class. PRESERVES: Tomatoes (Pint).

Wahaus, Mrs. Margaret, Woodlawn—CANNED FRUIT: Apple Sauce (Can); Apples, sliced (Can); Pears (Can). CANNED VEGETABLES: Corn, cut (Can); Pumpkin (Can); Lima Beans (Can); String Beans (Can); Tomato Soup (Can); Tomatoes (Can). PRESERVES: Exhibit (8 kinds), Cherries (Pint); Quinces (Pint); Pears (Pint); Tomatoes (Pint); Red Currants. BUTTERS AND JAMS: Exhibit (5 kinds), Fruit Butters; Apple Butter (Pint); Peach Butter (Pint); Grape Butter (Pint); Blackberry Jam (Pint). MARMALADES: Apple Marmalade (Can); Quince (Can). JELLIES: Apple (Glass); Blackberry (Glass); Crab Apple (Glass); Grape (Glass); Quince (Glass); Collection (6 kinds) Dark Fruit Jellies; Collection (6 kinds) Clear Light Fruit Jellies. FRUIT JUICES: Exhibit (5 kinds) Fruit Juices; Grape Juice (Pint); Apple Juice (Pint); Cider (Pint); Collection varieties Grap Juices. PICKLES: Exhibit (5 kinds), Sour Pickles; Exhibit (5 kinds) Sweet or Spiced Pickles; Mixed Pickles (Pint). MISCELLANEOUS: Fruit Syrup (Bottle); Tomato Catsup (Bottle); Exhibit Conserves (dried); Dried Apples (one-half pound).

White, Mrs. T. W., Federalsburg—CANNED FRUIT: Exhibit (8 kinds); Apple Sauce (Can); Apples, sliced (Can); Pears (Can); Peaches, halved (Can). PRESERVES: Exhibit (8 kinds). JELLIES: Collection (6 kinds) Dark Fruit Jellies; Collection (6 kinds) Clear Light Fruit Jellies. FRUIT JUICES: Exhibit (5 kinds). PICKLES: Pickled Beets (Pint). MISCELLANEOUS: Fruit Syrup (Bottle); Tomato Catsup (Bottle).

EXHIBITS IN AMATEUR GARDEN CONTEST—BALTIMORE CITY AND SUBURBS.

B. W. ANSPON, *Supt.*

The display this year was far better in quality, also in number of exhibits as compared with last year. Considerable rivalry was manifested by the different schools of Baltimore City and suburbs. Window boxes which had been taken care of by children were exhibited in the name of their schools. In the classes limited to school children interesting displays were entered. The keenest competition existed among the amateurs in the display of foliage and flowering plants, and exceptionally fine plants were exhibited. In several cases the plants were of rare varieties, well grown.

Abbott, F. L.—PEARS: Any variety (3 plates). VEGETABLES: Display (5 kinds).

Abbott, Nellie—Collection of Wild Nuts (6 kinds).

Armour, Mrs. Stella—1 Celosia (in Pot).

Arthur, Samuel—Fern (any variety); Specimen fancy foliage house plant; Collection of Wild Nuts (6 kinds).

Behrends, Miss Grace—Specimen Begonia (winter flowering).

Borbrenner, Mrs. Helen—Chrysanthemums; assorted varieties (vase of 12).

Cameron, Geo. W.—Specimen Begonia (foliage variety).

Clark, Mrs. R. T.—Specimen Fern (any variety); Specimen Palm (any variety); Specimen Begonia (foliage variety); Specimen Fancy Foliage House Plant. COLLECTION PLANTS: 2 Boston Ferns; 3 Aspidistras; Specimen Foliage Plant; Specimen Ferns (3 varieties).

Company J., Ft. Worthing School—1 Solanum.

Cox, Katherine, School No. 85—Specimen Fancy Foliage House Plant, Anthericum.

Dwyer, M. Ellen—Specimen Dracaena (any variety).

Eisermann, Mrs.—Begonias: Winter flowering; foliage variety; Specimen fancy foliage house plant, Aurancaria (2).

Ellicott, Jr., S. Vinton—Specimen fancy foliage house plant.

Fromm, L.—Specimen fancy foliage house plant (Cycas).

Harrison, Mrs. S. K.—Specimen Aspidistra.

Hoffman, G. Raymond—Chrysanthemums: Assorted varieties (vase of 12).

Huber, Evelyn—1 Impatiens Sultana.

Huber, Virginia—Specimen Begonia (foliage variety).

Imwold, Arnold—Specimen Aspidistra; fancy foliage house plant; Collection: 1 Holly, 1 Ardesia, 1 Lemon, 1 Aspidistra, 1 Loquat, 1 Aleafragrans, 1 Billbergia.

Imwold, J. Chas.—Display Vegetables (5 kinds).

James, Mrs.—Pears, any variety (3 plates).

Keiner, Mrs. Margaret—Specimen Palm (any variety); Aspidistras; Specimen Plain, variegated; Fruit: (3 plates); Specimen Anthericum; Specimen Kentia; Foliage Plants: Specimen variegated, Fancy.

Klender, Mrs. Mary—Chrysanthemums: Assorted varieties (vase of 12).

Sonnenberger, Mrs. Florence—Window Box Hardy Plants (winter use); Specimen Fern (any variety); Specimen Palm (any variety); Specimen Pandanus Veitchii (3 plants).

Lewis, Mrs. Lawrence—Specimen Aspidistra; Specimen Fancy Foliage House Plant.

Miller, Mrs.—Window Box (winter use); Chrysanthemums (12 in vase); Specimen Begonia (winter flowering).

Morrison, Margaret—Collection Wild Nuts (6 kinds); Collection Native-dried Grasses, arranged in artistic bouquet.

Nelker, N. B.—Specimen Fancy Foliage House Plant; Orange Tree; Specimen Anthericum.

Jones, Mr. T. H.—Specimen Fern (any variety); Specimen Palm (any variety); Specimen Aspidistra; Specimen Fancy Foliage House Plant (cycas).

Pfiffer, Miss Katharine—Specimen Begonia (foliage variety).

Rodgers, Margaret—Collection Wild Nuts (6 kinds).

Rodgers, Elizabeth—Pears, any variety (3 plates).

School No. 85—Special Prize.

Sheets, Mrs.—Specimen Palms, any variety (4); Specimen Aspidistras (4); Specimen Fancy Foliage House Plant.

Stuhmer, Jr., Henry—Specimen Fern (any variety); Collection Dried Grasses, arranged in artistic bouquet.

Spitznogle, Mrs. C.—Specimen Fancy Foliage House Plant.

Storm, Mrs. E.—Chrysanthemums: Assorted varieties (12 in vase); Specimen Fern (any variety); Specimen Begonia (winter flowering); Specimen Begonia (foliage variety); Specimen Dracaena (any variety).

Thurnzer, Edward—Specimen Fancy Foliage House Plant.

Tip Slee, Mrs. N.—Specimen Aspidistra (variegated); Specimen Fancy Foliage House Plant.
Varina, Frank—Specimen Begonia (winter flowering).

AWARDS FOR FRUIT AND NUT EXHIBITS.

JUDGES: A. J. FARLEY, Rutgers College, N. J.; E. C. AUCHTER, W. Va. University, Morgantown, W. Va.; C. J. TYSON, Floradale, Pa.

	Prizes.		
	1st.	2nd.	3rd.
Adams, J. H.		1	
Aronhalt, J.	1		
Bachrach, David		1	
Bikle, C. I.	8	6	
Brown, W. McC.	1		
Carroll Orchards	2		
Chevorant, J. B.		2	
Cohill, J. A.	1	4	2
Dennis, E. R.		1	
Detrow, Samuel	1		
Downey, Mrs. F. J.	1		
Gilardi, Lawrence	19	13	1
Hanson, Leroy		1	
Hanson Bros.	37	8	1
Hanson, Raymond	1		
Harris, W. B.	6	2	
Kahl, Walter		1	
Kelly, Miss D. E.		2	
Kelly, J. S.	4	2	
Killins, A. W.		1	
Lewis, Mrs. Lawrence	1		
Mann, Howard	2	1	
Miller, Hurly	1	1	
Moore, Willard		1	
Morgan & Haines	2		
Myers, Clarence B.			1
Myers, J. M.		2	
Richard, Tom	1		
Ridder, D. H.	1	2	
Sanger Bros.	3	1	
Scott, Bert		3	
Scott, John	1		
Smith, Charles L.	1	3	
Snader, A. P.	1		
Snowden, Miss Anna		2	
Snyder, E. B.	3	1	
Sollers, C. E.	1		
Stuhmer, Henry	1		
Thomas, Dr. Francis	1	1	3
Thomas, E. P.	7	8	2
Towson, A. L.	1		
Whiteford Bros.	2	1	
Woolford, Marshall	1		

AWARDS FOR FLORAL EXHIBITS.

JUDGES:

Tuesday—JOHN DODDS, Wyncote, Pa.
ROBERT CRAIG, Philadelphia, Pa.
S. S. PENNOCK, Philadelphia, Pa.

Wednesday—A. FARENWALD, Roslyn, Pa.
VICTOR GROSHENS, Roslyn, Pa.
DAVID G. GRILLBORTZER, Alexandria, Va.

CARNATIONS:

Thursday—CHARLES F. FEAST, Baltimore.
ROBERT L. GRAHAM, JR., Baltimore.
WILLIAM G. LEHR, Baltimore.

RETAILERS' WORK:

CHARLES F. FEAST, Baltimore.
ROBERT L. GRAHAM, Baltimore.
MRS. SCHULER THOMAS, Baltimore.

	Prizes.		
	1st.	2nd.	3rd.
Anderson, Andrew			1
Bauer, Fred C.	4	2	
Black Bros.		1	
Cook, John	Certificate of Merit.		
		2	1
Ekas, Harry	3	1	
Erdmann & Ulrich	2	1	2
Glass, James	3		
Hamilton, James	6		
Hannigan, H. J.	4		2
Hess, Conrad			1
Holliday Bros.	3		1
Johnston, Mrs. Mary	3	1	1
Lehr Bros.	2	2	
Lohr & Fritze	1		1
Lotze, G. A.	8	3	2
McCormick, John		1	
Morrison, George	10		
Moss, Isaac H.	5	8	3
Pierson, A. N., Inc.	Certificate of Merit.		
Quick, Harry J.	2	1	
	Certificate of Merit.		
Richmond, A. S.		1	
Richmond, Mack	5	7	
Seidewitz, Edwin A.		2	1
Smith & Co., Charles	1	3	1
Stevenson Bros.	6	2	
Vincent, Jr. & Sons Co., R.		2	
Wagner, John L.		3	

AWARDS FOR VEGETABLE EXHIBITS.

JUDGES: THOS. H. WHITE, D. N. SHOEMAKER, H. C. THOMPSON.

	Prizes.		
	1st.	2nd.	3rd.
Allardise, R. A.	1		
Balderston, Miss Bertha	1		
Boswell, W. K.	2		
Byrn, William	1		
Clarke, Enoch		1	
Cluff, Francis	1		
Gettings, John	1	1	
Hanson Bros.		3	
Herring, D.	1		
Hirst, J. Howard	6	4	
Hirst, Fred	5	1	
Imwold & Bros.		4	
Janning, John H.		1	
Kelly, J. S.		1	
Kendall, B. S.		1	
Kraft, Andrew	2	1	
Lewis, Mrs. L.	2		
Linthicum, W. R.	1		
McCloskey, E. G.		1	
Matthews, Frank	1		
Miller, George H.	1		
Morgan & Haines	1	1	
Morrison, George	1		
Myers, J. M.	1		
Norris, Jack		1	
Osborne, George M.	1		
Sloan, F. R.	1	1	
Stagg, A. M.		1	
Stewart Farms		1	
St. James, Lewis		1	
Tarbert, A. J.	2		
Thomas, S. P.		1	
Turner, M. J.	2		
Twining, Harry	1		
Underhill, S. M.	1		
Whitridge, William H.	1	7	
Wood, Winifred			1

AWARDS FOR HOME CANNED AND PRESERVED GOODS.

JUDGES: MRS. OLIVE K. CHESTNUT, MRS. J. E. METZGER, MRS. C. E. TEMPLE.

	Prizes.		
	1st.	2nd.	3rd.
Abbott, Mrs. F. L.		1	
Clark, Mrs. Sadie	2		2
Clark, Mrs. Annie	3	1	1
Crew, Miss Ida C.	2	2	1
Evans, Mrs.		1	
Federalsburg Farmers' Club	1		
Gettings, Miss Ella	11	18	9
Gettings, Miss Elsie	1	1	3
Girls' Canning Club			1
Harris, Mrs. A. L.	5	7	6

	Prizes.		
	1st.	2nd.	3rd.
Hoenig, Mrs. Henry	1	2	2
Imwold, Mrs. C. F	7	12	12
Kelley, Mrs.	1		
Laigneil, Mrs. Edith		2	1
Lewis, Mrs. Lawrence	21	10	6
Pfingston, Miss Elsie		3	
Shirk, Mr. John	3	3	1
Springer, Mrs. H. P.	1	2	1
Still Pond Grange		1	
St. James, Miss Florence	3	1	1
St. James, Miss Lillian	1		
St. James, Mrs. Lewis		3	4
Wahans, Mrs. Margaret	6	6	8
Wahans, Miss May	1		1
White, Mrs. T. W.	2	2	3

AWARDS IN AMATEUR GARDEN CONTEST.

JUDGES: Mrs. D. G. Worthington, Miss Rosalind Bruce, Mrs. H. W. Turner.

	Prizes.	
	1st.	2nd.
Abbott, Miss Nellie		1
Abbott, F. L.	1	1
Cameron, George W.	1	
Clark, Mrs. Reta T.		1
Dwyer, Miss M. Ellen	1	
Harrison, Mrs. S. K.	1	
Hoffman, G. Raymond	1	
Imwold, J. Charles		1
Imwold, Arnold	1	(Special)
Jones, Mr. T. H.	1	
Keiner, Mrs. Margaret		1
Miller, Mrs.	2	1
Morrison, Miss Margaret	2	
Rodgers, Miss Elizabeth	1	1
School No. 85	1	(Special)
Sheets, Mrs.	1	1
Sonnenberger, Mrs. Florence	2	1
Storm, Mrs. E.		3
Stuhmer, Jr., Henry		1
Slee, Mrs. N. Tip		1
Varina, Frank		1

AWARDS IN POSTER CONTEST.

JUDGES: Henry H. Wiegand, S. Edwin Whiteman, W. K. Sweeney.

Miss Anna Owens, Baltimore	1st	$25.00
Miss Leah Denbam, Roland Park	2nd	15.00
Miss Emily Kemberger, Halethorpe	3rd	10.00

THE CLUB EXHIBIT CONTEST.

E. N. Cory, *Supt.*

The Club Exhibit Contest inaugurated five years ago with the purpose of encouraging communistic effort, the diversification of crops and the improvement of the quality of farm products, has exceeded the most enthusiastic hopes of its founders.

Each year has witnessed a distinct increase in the efforts expended in this contest, culminating in a most instructive and beautiful exhibit in 1916.

It is a distinct pleasure to take this opportunity to thank and congratulate all exhibitors for their efforts in this contest.

A new feature in the judging was introduced, in providing for sweepstakes in the quality score. This method of judging curtailed a vast amount of work on the judges, whose painstaking and valuable services are gratefully acknowledged by the management.

The value of these contests to the individual, the community and the State cannot be overestimated. In these days of national stress, the lessons taught by this contest of careful planning, care in all measures that increase the quality, and thereby the keeping qualities of products and the saving of surplus crops by canning and drying, should bear fruit in increasing the actual food reserves of the state.

AWARDS.

Patapsco Farmers' Club	1st	$125.00
Olney Grange No. 7	2nd	100.00
Cordova Grange No. 301	3rd	75.00
Millersville Farmers' Club	4th	50.00
Federalsburg Farmers' Club	5th	25.00

EXHIBITORS.

Price Farmers' Club.
Patapsco Farmers' Club.
Roslyn Grange No. 241.
Cambridge Grange No. 209.
Cordova Grange No. 301.
Millersville Farmers' Club.
Cecil Farmers' Club.
Olney Grange No. 7.
Federalsburg Farmers' Club.
Crisfield Grange No. 284.
Jarrettsville Grange No. 259.

MARYLAND CROP IMPROVEMENT ASSOCIATION

List of Exhibitors and Awards

CORN.

Best 10 Ears of White Corn, Any Variety.

CLASS 1.—White Corn.

Prem.	Name	Town	County
1	F. B. Smith	McKendree	Anne Arundel
2	F. W. Weems	Shadyside	Anne Arundel
3	O. Rideout	Annapolis	Anne Arundel
1	Dr. O. Gorsuch	Glencoe	Baltimore
2	B. H. Myers	Lutherville	Baltimore
3	George Peterman	Freeland	Baltimore
1	J. W. Jones	Dunkirk	Calvert
1	Richard Block	Choptank	Caroline
2	W. R. Clark	Federalsburg	Caroline
1	C. Schnable	Eastview	Carroll
2	J. M. Myers	Westminster	Carroll
3	H. A. Birler	Westminster	Carroll
1	J. P. Meredith	Elkton	Cecil
1	M. A. Marbury	Riverside	Charles
1	T. H. Hopkins	Cambridge	Dorchester
2	Fred Wright	E. New Market	Dorchester
3	J. H. Hirst	Cambridge	Dorchester
1	J. W. Galbreath	Street	Harford
2	A. G. Ensor	Forest Hill	Harford
3	A. D. Radebaugh	Forest Hill	Harford
1	R. C. Dutrow	Adamstown	Frederick
2	J. A. Engle	Bartholows	Frederick
3	B. T. Zimmerman	Adamstown	Frederick
1	Howard Mann	Ellicott City	Howard
2	A. R. Sterns	Ellicott City	Howard
3	E. R. Dennis	Ellicott City	Howard
1	A. Stabler	Sandy Springs	Montgomery
2	Myers Bros.	Brookville	Montgomery
3	D. F. Oland	Olney	Montgomery
1	J. M. Hall	Hyattsville	Prince George
1	J. T. Anthony	Chestertown	Queen Anne
1	A. L. Fish	Pearson	St. Mary's
2	G. R. Quirk	Pearson	St. Mary's
3	G. F. Wathen	Leonardtown	St. Mary's
1	H. B. Twining	Princess Anne	Somerset
1	E. H. Cosden	Longwoods	Talbot
2	C. C. Kennamon	Cordova	Talbot
3	George Cooper	Easton	Talbot
1	J. R. Davis	Fairplay	Washington
1	E. A. Weatherly	Salisbury	Wicomico

Best 10 Ears of Yellow Corn.

1	R. C. Wilson	Rawlings	Allegany
2	Morgan & Haines	Carlos	Allegany
1	Phipps' Lighorn Farm	Pasadena	Anne Arundel
2	O. Ridout	Annapolis	Anne Arundel
1	Brookland Farm	Lutherville	Baltimore
2	John Tarbert	Glencoe	Baltimore

3	E. D. Choate	Roslyn	Baltimore
1	H. A. Bixler	Westminster	Carroll
2	C. Schnable	Eastview	Carroll
1	L. Balderson	Calora	Cecil
1	J. H. Hirst	Cambridge	Dorchester
2	H. Osborne	Hurlock	Dorchester
3	A. K. Austin	Cambridge	Dorchester
1	J. A. Engle	Bartholows	Frederick
2	J. B. Jones	New Market	Frederick
3	T. Zimmerman	Adamstown	Frederick
1	C. R. Galbreath	Street	Harford
2	R. W. Phelps	Forest Hill	Harford
3	G. P. Radebaugh	Bynum	Harford
1	Howard Mann	Ellicott City	Howard
2	J. T. Clark	Ellicott City	Howard
3	R. Hanson	Ellicott City	Howard
1	J. E. Morris	Worton	Kent
1	N. Stabler	Silver Spring	Montgomery
2	J. N. Henderson	Germantown	Montgomery
3	Francis Snowden	Ashton	Montgomery
1	G. F. Wathen	Leonardstown	St. Mary's
2	W. H. Mattingley	Leonardstown	St. Mary's
1	I. C. Doub	Hagerstown	Washington
2	William F. Davis	Fairplay	Washington
3	H. E. Davis	Fairplay	Washington
1	T. Hearne	Salisbury	Wicomico
2	Homestead Dairy	Salisbury	Wicomico
1	C. G. Dryden	Newark	Worcester
2	M. E. Halloway	Newark	Worcester
3	A. C. Halloway	Newark	Worcester

CLASS 2.

Best 10 Ears of White Corn, District Premiums.

1	E. H. Cosden	Longwood
2	J. I. Anthony	Chestertown
3	Fred Wright	E. New Market
4	Alex. Booth, Jr.	Choptank
1	J. W. Galbreath, Jr.	Street
2	Dr. D. Gorsuch	Glencoe
3	J. B. Clark	Ellicott City
4	A. G. Ensor	Forest Hill
1	C. O. Drury	Chaney
2	A. L. Fish	Pearson
3	G. R. Quirk	Pearson
4	J. W. Jones	Dunkirk

YELLOW CORN.

1	C. G. Dryden	Newark
2	M. E. Halloway	Newark
3	J. H. Hirst	Cambridge
4	J. E. Morris	Worton
1	Brookland Farms	Lutherville
2	M. O. Stabler	Spencerville
3	Newton Stabler	Silver Spring
4	Howard Mann	Ellicott
1	C. O. Drury	Chaney
2	M. J. Turner	Gambrills

3	Phipps' Lighorn Farm..	Pasadena
4	G. F. Wathen, Jr.....	Loveville
1	R. C. Wilson.....	Rawlings
2	H. S. Rawlings.....	Pinto
3	Morgan & Haines.....	Carlos
4	J. A. Shaffer.....	Oakland

WHITE CAP CORN.

1	M. K. Ward.....	Jarrettsville
2	J. R. Davis.....	Fairplay
3	D. G. Harry.....	Pylesville
4	J. B. Jones.....	New Market

CLASS 3.—Honorary Class.

1	J. R. Galbreath.....	Street
2	G. P. Radebaugh.....	Bynum
3	A. B. Twining.....	Forest Hill
4	J. H. Chambers.....	Pearson
1	A. B. Twining.....	Forest Hill
2	R. L. Dutrow.....	Adamstown
3	J. H. Geis.....	Brooklyn

CLASS 4.—Boys' Clubs, White Corn.

1	Hopper Cosden.....	Longwood
2	James Cosden.....	Longwood
3	Josiah Massey.....	Chestertown
4	Andrew Shortall.....	Easton
1	Paul Galbreath.....	Street
2	Malcolm Galbreath.....	Street
3	T. O. Mathews.....	Darlington
4	E. Burlin.....	Port Deposit
1	J. T. King.....	Oakville
2	Thomas Jones.....	Chaneyville
3	G. W. Calvert.....	Chaneyville
4	J. Bowling.....	Newport

YELLOW CORN.

1	J. Bounds.....	Newark
2	J. E. Smith.....	Chestertown
3	R. Bradford.....	Newark
4	Boyd Hearn.....	Salisbury
1	E. Stabler.....	Silver Spring
2	Osborn Stabler.....	Silver Spring
3	Ed. Ady.....	Street
4	Oliver Ady.....	Sharon
1	Bryce Carder.....	Oldtown
2	Guy Wilson.....	Rawlings
3	Lester Hite.....	Cumberland
4	Golden Nixen.....	Oldtown

WHITE CAP CORN.

1	J. B. Ward.....	Jarrettsville
2	Newton Strite.....	Clearspring
3	Joseph Moore.....	Elkton
4	Fiery Strite.....	Clearspring

CLASS 5.—Single Ear, State Wide.

1	Dr. D. Gorsuch	Glencoe
2	J. B. Clark	Ellicott City
3	J. R. Galbreath	Street

YELLOW CORN.

1	A. B. Twining	Forest Hill	
2	M. O. Stabler	Spencerville	
3	R. L. Dutrow	Adamstown	
	A. B. Twining	Forest Hill	(Sweepstakes)

CLASS 6.—Fifty-Ear Class.

1	J. R. Galbreath	Street	
2	G. P. Radebaugh	Bynum	
3	J. B. Clark	Ellicott City	
1	A. B. Twining	Forest Hill	
2	M. O. Stablee	Spencerville	
3	Howard Mann	Ellicott City	
	J. R. Galbreath	Street	(Best 50 ears)
	J. R. Galbreath	Street	(Best 10 ears, white)
	A. B. Twining	Forest Hill	(Best 10 ears, yellow)
	J. R. Galbreath	Street	(Best 10 ears, Grand C.)

CLASS 7.—Sweet Corn.

1	H. A. Bixler	Westminster	
2	B. S. Kendall	Clarksville	
3	A. G. Zimmerman	Frederick	
1	R. C. Zimmerman	Frederick	
2	A. G. Zimmerman	Frederick	(Country Gentleman)
3	L. St. James	Federalsburg	
1	F. B. Jenkins	Hyde	
2	A. A. Ady	Sharon	
3	T. St. James	Federalsburg	

CLASS 8.—Pop Corn.

1	Fred Gilpin	Sandy Spring
2	A. G. Zimmerman	Frederick
3	H. A. Bixler	Westminster

CLASS 9.—Wheat.

1	Morgan & Haines	Carlos	Allegany
2	F. W. Weems	Shadyside	Anne Arundel
1	Kerwin Hyland	Freeland	Baltimore
2	F. W. Hoen	Lorely	Baltimore
3	G. H. Miller	Perry Hall	Baltimore
1	L. St. James	Federalsburg	Caroline
2	W. H. Clark	Federalsburg	Caroline
1	P. C. Prough	Sykesville	Carroll
1	J. S. Cullen	Port Deposit	Cecil
1	J. E. Patten	E. New Market	Dorchester
2	H. Brannock	Cambridge	Dorchester

3	I. H. Austine	Cambridge	Dorchester
1	L. B. Hargett	Frederick	Frederick
2	J. B. Jones	New Market	Frederick
3	B. F. Zimmerman	Adamstown	Frederick
1	H. Bennington	Pylesville	Harford
1	J. F. Hargett	Boyds	Montgomery
2	Myers Bros.	Brookville	Montgomery
3	F. Snowden	Ashton	Montgomery
1	J. R. Davis	Fairplay	Washington
1	P. V. Twining	Princess Anne	Somerset
2	George Kemp	Princess Anne	Somerset
3	J. T. Cowger	Princess Anne	Somerset

CLASS 10.—District Premiums.

1	L. St. James	Federalsburg	
2	J. E. Patten	E. New Market	
3	P. V. Twining	Princess Anne	
1	Kerwin Hyland	Freeland	
2	J. F. Hargett	Boyds	
3	A. P. Lipton	Jarrettsville	
1	J. H. Geis	Brooklyn	
1	Morgan & Haines	Carlos	

CLASS 11.—Honorary, Wheat.

1	H. Weber & Sons	Oakland	(Grand Champion)
2	John Ludwig	Freeland	
3	Howard Mann	Ellicott City	

CLASS 12.—Oats.

1	W. McC. Brown	Oakland	(Spring) (Sweepstakes)
2	S. T. Brown	Oakland	(Spring) (Sweepstakes)
3	Joseph T. Beckman	Oakland	(Spring) (Sweepstakes)
1	H. B. Twining	Princess Anne	(Winter)
2	George Kemp	Princess Anne	(Winter)
3	J. L. Cowger	Princess Anne	(Winter)

CLASS 13.—Barley, State Wide.

1	R. L. Dutrow	Adamstown
2	R. C. Dutrow	Adamstown
3	J. M. Myers	Westminster

CLASS 14.—Rye.

1	T. W. White	Federalsburg
2	J. L. Cowger	Princess Anne
3	W. H. Clark	Federalsburg

CLASS 15.—Buckwheat.

1	J. A. Shaffer	Oakland
2	M. J. Turner	Gambrills
1	H. B. Twining	Princess Anne

2	L. St. James	Federalsburg
3	T. W. White	Federalsburg

CLASS 16.—Cow Peas.

1	L. St. James	Federalsburg	(New Era)
2	J. T. Anthony	Chestertown	(Buff)
1	W. H. Adams	Gambrills	(Black)
2	Zach. Turner	Gambrills	(Black)
3	L. St. James	Federalsburg	(Black)
1	L. St. James	Federalsburg	(Whipporwill)
2	W. H. Adams	Gambrills	(Whipporwill)
1	L. St. James	Federalsburg	(Blackeye)
2	J. W. White	Federalsburg	(Blackeye)
3	W. H. Adams	Gambrills	(Blackeye)
1	F. W. Wagner	Federalsburg	(Gray Crowder)
2	L. St. James	Federalsburg	(Gray Crowder)
3	W. H. Adams	Gambrills	(Gray Crowder)
1	W. R. Linthicum	La Plata	(Groit)
2	W. H. Adams	Gambrills	(Groit)
3	C. O. Drury	Chaney	(Groit)

CLASS 17.—Soy Beans.

1	Melrose Dairy Farm	Bynum
2	L. St. James	Federalsburg
3	H. B. Twining	Princess Anne

CLASS 18.—Red Clover Seed.

1	D. F. Cathcart	White Hall	
2	B. F. Zimmerman	Adamstown	
3	T. E. Zimmerman	Adamstown	
1	B. F. Zimmerman	Adamstown	(Timothy Seed)
2	J. S. Cullen	Port Deposit	(Timothy Seed)

CLASS 19.—Timothy Hay.

1	J. M. Myers	Westminster
2	C. Schnable	Eastview
3	W. H. Whitridge	Rogers

ALFALFA.

1	H. Mann	Ellicott City
2	J. T. Anthony	Chestertown
3	J. H. Hargett	Boyds

RED CLOVER HAY.

1	Hauser Bros.	Ellicott City
2	J. E. Smith	Chestertown
3	J. T. Smith	Chestertown

ORCHARD GRASS.

1	H. Mann	Ellicott City
2	Hauser Bros.	Ellicott City

SUDAN GRASS.

1 H. Mann.....Ellicott City
2 O. Rideout.....Annapolis

CLASS 20.—Tobacco.

FLUE CURED.

1 W. A. Walker.....Mt. Airy

BARN CURED.

1 Dr. C. Hutchins.....Prince Frederick
2 J. W. Williams.....Laurel
3 H. D. Brown.....Millersville

CLASS 21.—Barn Cured.

1 J. H. Drury.....Chaney
2 M. J. Turner.....Gambrills
3 Zach. Turner.....Gambrills

COMMERCIAL EXHIBITORS AT "MARYLAND WEEK."

American Agricultural Chemical Co.	Boston, Mass.
American Agriculturist	New York, N. Y.
American Bottle Cap Co.	Baltimore, Md.
American Jersey Cattle Club	New York, N. Y.
Ayrshire Breeders' Association	Brandon, Vt.
Baltimore Sun	Baltimore, Md.
Baltimore Pearl Hominy Co.	Baltimore, Md.
Baugh & Sons Co., of Baltimore City	Baltimore, Md.
Bean Spray Pump Co.	Lansing, Michigan
Bowker Insecticide Co.	Baltimore, Md.
Chapin & Co.	Chicago, Ill.
City Dairy Co.	Baltimore, Md.
Christian Science Monitor	Baltimore, Md.
Crocker, S. G.	Baltimore, Md.
DeLaval Separator Co.	New York, N. Y.
Emmert, George	Baltimore, Md.
German Kali Works	New York, N. Y.
Grasselli Chemical Co.	New York, N. Y.
Griffith & Turner Co.	Baltimore, Md.
Harrisons' Nurseries	Berlin, Md.
Holstein-Fresian Association	Brattleboro, Vt.
Hubbard Fertilizer Co.	Baltimore, Md.
Kaestner, E. A.	Baltimore, Md.
Kentucky Tobacco Product Co.	Louisville, Ky.
Knabe Piano Co.	Baltimore, Md.
Larro Feed Co.	Baltimore, Md.
LeGore Combination Lime Co.	LeGore, Md.
Lord & Burnham Co.	Philadelphia, Pa.
Louden Machinery Co.	Fairfield, Iowa
Mallalieu & Conrey	Philadelphia, Pa.
Maryland Workshop for the Blind	Baltimore, Md.
Mechling Bros. Mfg. Co.	Camden, N. J.
Michell Co., Henry F.	Philadelphia, Pa.
Niagara Sprayer Co.	Middleport, N. Y.
Pennsylvania Farmer	Philadelphia, Pa.
Practical Farmer	Philadelphia, Pa.
Radebaugh, G. P.	Bynum, Md.
Security Cement & Lime Co.	Hagerstown, Md.
Sharples Separator Co.	West Chester, Pa.
Swift & Co., Inc.	Baltimore, Md.
The Kil-Tone Co.	Newark, N. J.
The Meyer Stisser Co.	Baltimore, Md.
Thomsen Chemical Co.	Baltimore, Md.
Twining, A. B.	Forest Hill, Md.
Tyson Bros., Inc.	Flora Dale, Pa.
Walker-Gordon Laboratory	Baltimore, Md.
Whiteford, C. P.	Whiteford, Md.

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